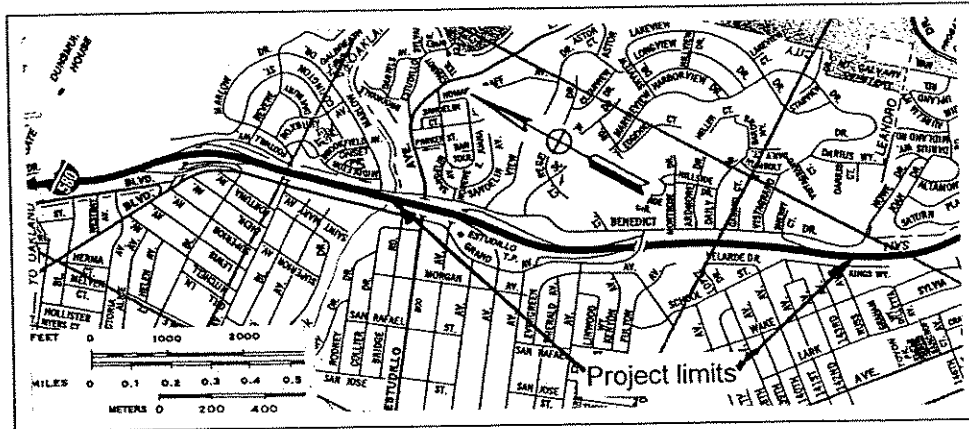


Tony Wong
Ala-I
6-1168

04 - ALA - 580, KP53.9/55.7
(PM33.5/34.6)
RU4248 - 126200



NOISE BARRIER SCOPE STUDY REPORT



On Route 580
From Estudillo Avenue
To 141 st Avenue

I have reviewed the right of way information contained in this Noise Barrier Scope Summary Report and the R/W Data Sheet attached hereto, and find the data to be complete, current, and accurate:

R.A. MACPHERSON
DISTRICT DIVISION CHIEF - RIGHT OF WAY

APPROVAL RECOMMENDED:

ROBERT A. ANDERSON
PROJECT MANAGER

APPROVED:

BIJAN SARTIPI
DISTRICT DIVISION CHIEF, DESIGN EAST

6/4/01
DATE

This Noise Barrier Scope Summary Report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

Vincent Tsin

Vincent M. Tsin
REGISTERED CIVIL ENGINEER

5-11-2001

DATE



NOISE BARRIER SCOPE SUMMARY REPORT

1. INTRODUCTION

A. Proposal and Limits

Construct ten noise barriers on both sides of Route 580 freeway from KP53.9 to 55.7, between Estudillo Avenue and 141st Avenue. This NBSSR replace the Project Report.

B. Deficiencies & Justification

Section 215.5 of the Streets and Highways Code requires Caltrans to develop and implement a system of priorities for the need of installation of noise barriers along freeways in the California freeway and expressway system. The highest consideration shall be given to residential areas, which were developed prior to the opening of the freeway or if alterations made to the freeway since its original opening, caused a 3dBA increase in ambient noise levels.

This project meets the above requirements and was originally prioritized on the State HB311 Candidate project list.

C. Project Category

Since this project will be of minimal economic, social, or environmental significance, it will be Categorically Exempt under CEQA, and be a Category 5 project.

2. BACKGROUND

A. Funding Source:

This project will be funded by the Ala Co CMA, not the HB311 program.

(1) Is project in STIP ? No.

This project will be programmed in the STIP cycle 2003 by the Alameda Congestion Management Agency (ACMA)

(2) Is project being advanced by local agency with costs to be paid back by State ? No.

The California Department of Transportation (Caltrans) had a Community Noise Abatement Program (HB311) to prioritize and ultimately construct soundwalls along existing freeways under Section

215.5 of the California Streets and Highways Code. The program has undergone sweeping change under SB45, which fundamentally change the way soundwall projects are programmed and administered. SB45 repealed the separate programming element for soundwalls, and shifted programming authority to local Regional Transportation Planning Authorities (RTPAs). RTPAs, at their option, can fund soundwall projects in their RTIP. They may also set different qualifying criteria or programming priorities. Alameda County Congestion Management Agency (ACMA) submitted project nomination Fact Sheet for the programming of STIP funds for the entire ten walls.

B. Public Involvement

(1) Community support and/or opposition:

This location has received many complaints concerning excessive freeway traffic noise impacting the residential units.

(2) Actual or proposed community contact about proposed noise barrier and aesthetics:

The public meeting will be held after NBSSR, Environmental document, Exhibits are ready and set up with the help of ACCMA and the City of San Leandro.

(3) Commitments to Local Agencies: None

(4) Unresolved issues : None

C. Project Priority

On Statewide Priority List : Not Applicable

3. DESIGN INFORMATION

A. Existing Facility

(1) The existing facility is an eight-lane freeway, designated as a scenic route. The topography includes flat and rolling grades with dense shubbery growth and tall native trees along the freeway.

B.

(1) Noise Barrier:

Ten locations were chosen for the noise barriers. The attached layouts and typical cross sections provide more information regarding the

heights, length, and limits of the noise barriers. See Attachments B and F. Within the proposed project limits, existing trees and other vegetation may need to be removed, and light posts that need to be relocated. No other unusual features are noted.

Approximately 75 and 45 meter bridge barrier railings shall be removed and retrofitted with new concrete barriers with soundwall on the top for the San Leandro Creek bridge and Estudillo Avenue Undercrossing respectively. A 120 meter long Type I cantilever retaining wall must be retrofitted with a concrete barrier and sound wall.

(2) Right of Way and Fencing

Construction easements will be needed for portions of the proposed noise barriers along the State's Right of Way. About 1000 meter of chain link fence and 400 plus meter Metal Beam Guard Railing will need to be removed.

(3) Traffic Data

a. Current Year: 2000

ADT: 126,000 % Trucks: 1.20%

b. Design Year: 2020

ADT: 171,000 DHV: 13,680

(4) Field Review

Date: 2/7/00

District Personnel (Name/Branch):

Vincent Tsin Design East Alameda I

Andre H. Nguyen Environmental Engineering

Ken Lastufka Environmental Engineering

District Program Advisor Field Review: Victor Zeuzem Date: 12/5/00

(5) Noise Study

Noise Study Completed ? Yes Date: 01/05/01

Noise Report Prepared? Yes. Date: 01/05/01

Datum of Noise Barrier Height Basis : Both ETW and R/W Line

4. PROPOSAL

A. Description:

It is proposed to build soundwalls on Route I-580 in San Leandro, from Estudillo Avenue to 145th Avenue to mitigate the effects of excess traffic noise on residents adjacent to the freeway. Ten locations were chosen on both sides of the freeway. No widening is proposed in this project. The shoulder will be extended from 0.7 m to 0.9 m along those segments of the noise barrier that are located on shoulder. This shoulder work is necessary to establish between 3.353 and 3.734 m of horizontal clearance. The soundwalls along the R/W line will be more than 4.5 m from the edge of the traveled way. A safety shape concrete barrier is required for all noise barrier within 4.5 m of the edge of traveled way (see Highway Design Manual index 1102.2), hence noise barrier segments along the edge of shoulder will be placed on safety shape concrete barrier. There will be structure retrofit work required on both the San Leandro Creek bridge, Estudillo Avenue under crossing bridge, and retaining wall "M". See Attachment C.

B. VA Study :

All soundwalls will be located either near the edge of shoulder in embankment fill areas or at the State's Right-of-way in cut areas. The choice of materials will be based on aesthetic considerations, community acceptance and cost.

C. Acceptable noise barrier materials for proposed project:

The possible alternative designs included in final project, as per HDM Index 1102.7 are shown below:

- i. Masonry Block wall
- ii. Concrete Panel wall

The final selection, however, will be made during the PS&E stage.

Soundwalls on the San Leandro Creek bridge, Estudillo Avenue UC bridge and Retaining wall "M" will be designed by the Division of Structure.

D. Noise Study Recommendation(s):

Wall No.	Description	Length (m)	Height (m)	Direction(EB,WB) and Location (R/W line, shoulder)	No. of homes
1	140th/143rd Ave	93	3.7	EB shoulder	11
2	On Velarde bet 140th/Lopez	308	3.7	EB R/W line	5
7	On Kingsway bet Russ/143rd	306	3.7	EB shoulder	3
8	On Grand bet Kenton/Emerald	521	3.7	EB R/W line	23
10	On EB 580 bet Maud/Dolores	181	3.0	EB shoulder	22
3	On Benedict bet Scenic View/Estudillo	528	3.0	WB shoulder	18
4	On Benedict bet Grand/Hillside	121	3.7	WB R/W line	5
5	On Benedict bet Scenic View/Hillside	195	3.7	WB R/W line	10
6	On Benedict bet Scenic View/Hillside	213	4.9	WB R/W line	10
9	On Benedict bet Admore/Grand	178	3.0	WB R/W line	6

E. Noise Barrier Foundation:

- (1) Locations where soil or other conditions would require nonstandard foundations:

At this stage we do not know if non-standard foundations will be required, but this will be investigated during the PS&E stage. In case soil or other conditions require non-standard foundations, special design will be requested from the Division of Structures during the PS&E stage.

- (2) Non-standard foundation locations (including: Wall Number, Limits, and Foundation Type):

San Leandro creek bridge No. 33-07 (75 meter, spread footing on steel piles)

Estudillo Avenue UC bridge No. 33-332 (41.148 meter, 2 curtain wall abutments & 2 bents)

Retaining Wall "M" (120 meter type 1 cantilever, spread footing)

Division of Structures Recommendation:

Bridge Site data was sent to Structure Design for Advance Planning Study. Division of Structures will design these non-standard foundation incorporated with the existing foundation.

F. Design Details :

The design details for the project will be provided at the PS&E stage.

Pavement/shoulder rehabilitation or reconstruction : Pavement/shoulder

rehabilitation or reconstruction may be required. The extent of work will be small. Refer to the preliminary cost estimate.

Drainage : Drainage work will be required

Signs : No permanent signs are required for this project.

Lighting : Along the edge of shoulder, existing lighting poles need to be modified or relocated during construction of soundwall.

Utility Relocation : ROW is in the process of contacting utility companies for the utility verification, but we do not expect any relocation necessary.

Structure Work : Replace existing bridge railing with Type 736 Safety shape concrete barrier and retrofit top portion of retaining wall M.

Highway Planting : Some small trees may need to be removed for construction purpose and any replacement or mitigation will be determined by Landscape during PS&E.

Planting/Irrigation Modification : The extent of the planting/irrigation modifications will be determined after the exact location of the noise barriers has been established.

Ramp Metering : No ramp metering will be done as part of this project.

G. Nonstandard design features : Caltrans standard noise barrier design is utilized.

Mandatory Design Requirements : All design features meet the requirement of Mandatory standards.

Date of Fact Sheet approval : Not Applicable.

Advisory Design Requirements : Not Applicable.

H. Cost Estimate :

Construction	\$ 4,469,217
Right of Way	\$ 86,500
Total	\$ 4,555,717

See Attachment 3 for Preliminary Cost Estimates.

I. Analysis of Proposal

(1) Cost effectiveness (See HDM Index 1104.6):

This project meets the cost effectiveness criterion of \$45,000 per residence established by the Alameda County CMA.

Estimated cost of project	\$4,555,717
Residential units protected	113
Cost per unit	\$40,316

(2) Noise Reduction

- 5 dBA reduction is the minimum noise level of attenuation.
- The projected future noise level is estimated to be in the range of 77 to 83 dBA. The proposed noise barrier facilities are expected to lower noise levels to an average of 68 dBA. All noise levels in this report use descriptor Leq (h).

DIR	Wall No	Height(m)	Future(No Wall)	Future(With Wall)	Average Attenuation(dBA)
EB	1	3.7	80	66	14
EB	2	3.7	81	68	13
EB	7	3.7	81	70	11
EB	8	3.7	80	66	14
EB	10	3.0	82	71	12
WB	3	3.0	77	68	9
WB	4	3.7	78	67	10
WB	5	3.7	78	68	10
WB	6	4.9	81	69	12
WB	9	3.0	79	70	9

Level of Service "C" with the following assumptions were made:

Vehicles/hour/lane	=2,000
Speed	=105 Kph

See table C-1, C-2, D-1, & D-2 in Traffic Noise Impact Report (Attachment E) for detailed breakdown of the existing and future noise conditions determined during model calibration counts. See Exhibit E for traffic assumptions (VPH) for the TNM noise computer model.

- Intercept of line of sight to Truck Exhaust Stack:

After minimum noise barrier heights were determined through noise modeling, further height adjustments were made to intercept the line of sight between a truck stack assumed to be 11.5 feet above ground and a receptor assumed to be 5 feet above ground.

J. Funding and Staffing

- (1) Cooperative Features : Not applicable.

- (2) Project Support:

Proposed Program FY	District PY'S			Engineering Service Center PY'S					FY Total PY'S	Other Costs (\$)
				Structures		METS and Others		Office		
	Design	R/W	Constr	Design	Constr	Design	Constr	Engr		
99/00	0.9			0.2					0.9	85,775
00/01	3.0	0.1		0.8					3.3	291,560
01/02	3.0	0.1							3.9	361,180
02/03	1.1	0.1			0.6			0.6	2.4	170,713
03/04	0.2		2.5		1.0				3.7	336,696
04/05	0.1		1.2	0.1	1.0				2.4	224,372
05/06	0.1								0.1	13,854
TOTAL ESTIMATED PROJECT PY'S AND OTHER SUPPORT COSTS:									16.7	\$1,484,150

- (3) Oversight Personnel Years (Caltrans) Only

Design Vincent Tsin

Right of Way Allison Paich

Construction Barbara Condie

K. Programming and Scheduling

- (1) Proposed Project Schedule (Summarize from PYPSCAN)

Milestone	Date
Issue Approved NBSSR :	05/01
Approve PR & Finalize Envir. Document :	
Complete PS&E :	02/03
RW certification :	04/03

Ready to List : 06/03

Construction Completed & Accepted : 07/05

(2) Proposed Budgetary Description:

04-ALA-580

KP 53.9/55.7 (PM 33.5/34.6)

In Alameda County, in the City of San Leandro, on State Route 580 eastbound and westbound from Estudillo Avenue to 141st Avenue, construct soundwalls.

5. OTHER CONSIDERATIONS

A. System Planning

- Route Concept Report for project limits:
Route 580, within the project limits, is an eight lane freeway with 3 meter inside and outside shoulders and divided by concrete barrier. Due to increased traffic volumes, it is essential to mitigate the effects of higher noise levels through the construction of noise barriers at the chosen locations.
- Other proposed projects within this project's limits:

There is no proposal to increase capacity via lane addition projects in the near future.

B. Hazardous Wastes :

In the event that demolition work involves major structures, asbestos could present an issue of concern. Aerially deposited lead (ADL) has been found to be emitted from automobile exhaust and are deposited along the unpaved shoulder areas. There are various requirements that must be met when handling/managing materials with regulated levels of lead : proper testing of materials to be disturbed by construction work activities must be performed following regulation from the Department of Toxic Substances Control (DTSC). The Environmental Engineering unit will test for ADL once the Project Engineer sends the request with appropriate layouts and cross-sections.

Initial Site Assessment : ISA was completed at November 22, 2000.

C. Traffic Control

- Transportation Management Plan for this project is not required.

- Prolonged temporary ramp closures :

Prolonged temporary ramp closures are not anticipated, however, temporary K rail will be used along the shoulder of freeway and bridges, when soundwalls are constructed along shoulder.

- Lane/Ramp Closure Plan (e.g., hours of allowed work):

Most likely, there will not be any lane/ramp closures during normal day-time traffic peak hours. Local street and bridge decks may be restriped to gain construction working space along retaining wall "M" and bridges.

D. Wetlands/Floodplain :

This project is not located in a wetland or floodplain area. Therefore, an evaluation of the effects of the noise barriers on the floodplain, in accordance with Topic 804 of the HDM, has not been performed.

E. Following permits may be required :

Agency	Yes / No	Date Contacted	Results
Fish & Game	no		
Corp. of Engineers	no		
Coastal Commission	no		
BCDC (District 4)	no		
Local flood control district	no		

F. Railroad(s) or Utility involvement :

There is no Railroad involvement. However, utility verification will be done after contacting utility companies through Caltrans right of way utility agents during PS&E stage.

6. PROJECT REVIEWS

District Program Advisor :	Victor Zeuzem	Date: 2/1/2001
Headquarters Program Advisor :	Keith D. Jones	Date: 2/1/2001
HQ PD Coordinator :	Mike Thomas	Date: 2/6/2001
Design Reviewer :	Gordon Brown	Date: 2/6/2001

FHWA Transportation Engineer : Mahfoud Licha Date: 2/1/2001

ACCMA Transportation Engineer : Matthew Todd Date: 2/7/2001

Type of Federal Involvement Federal Funding may be involved in this project.

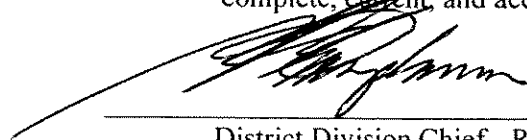
7. ENVIRONMENTAL STATUS

The Office of Environmental Planning will conduct a preliminary review of the project. Based upon the existing information, the project will require the completion of a Categorical Exemption under Class 1 pursuant to the California Environmental Quality Act and a Categorical Exclusion pursuant to the National Environmental Policy Act. This determination is contingent upon the existing project description. In addition, some conditions will have to be satisfied such as the testing of aerially deposited lead, and specifications for the protection of water resources.

The final project design is required to take into consideration the potential visual impact of the proposed sound wall, the existence of trees at the site, and the impact of potential lane closures on traffic circulation. Measures in the project design may need to be included to ensure that these issues do not have the potential to significantly affect the environment.

8. RIGHT-OF-WAY CERTIFICATION

"I have reviewed the right-of-way information contained in this Noise Barrier Scope Summary Report and the Right of Way Data Sheet attached hereto, and find the data to be complete, ~~current~~, and accurate."



District Division Chief - Right of Way

4/30/01

Date

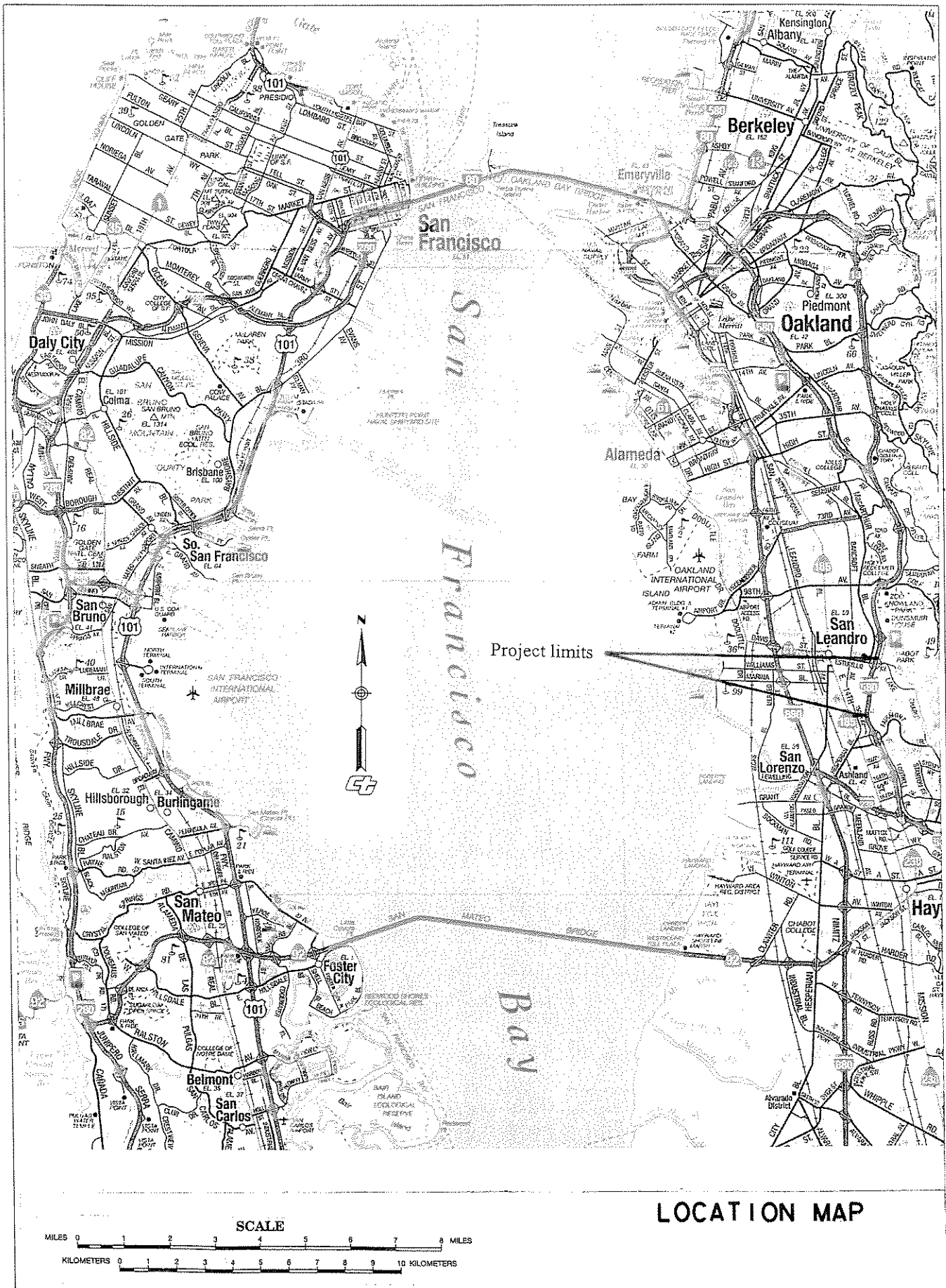
9. PROJECT PERSONNEL

<u>Name</u>	<u>Organization/Branch</u>	<u>Phone</u>
Robert A. Anderson	Project Manager, Design East-Ala I	(510) 286-6155
Tony Wong	Branch Chief, Design East-Ala I	(510) 286-5168
Vincent Tsing	Project Engineer, Design East-Ala I	(510) 286-4699

Shiang Yang	Environmental Engineering	510 286-5652
Cher Daniels	Environmental Engineering	916-274-5800
Kenneth Lastufka	Environmental Engineering	916-274-5826
Donald Chin	NR Landscape Architect	916-274-5833
Steve Werner	NR Hazardous Waste	707-441-5844
Mark Melani	NR Hazardous Waste	530-741-4556
Cyrus Hui	North Region Design	916-274-5960
Yemane Tekeste	NR Design Sacramento	916-274-5960

10. ATTACHMENTS

- A. Location Map
- B. Noise Barrier Strip Map (Layouts)
- C. Preliminary Cost Estimate
- D. Categorical Exemption/Exclusion Form (pending)
- E. Traffic Noise Impact Study Report
- F. Typical Cross Sections
- G. Right of Way Data Sheet
- H. XPM Print



PRELIMINARY PROJECT COST ESTIMATE SUMMARY

Type of Estimate NBSSR

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

Program Code SW-HB311

Project Description

Limits In Alameda County in San Leandro on NB Route 580 from Estudillo Avenue to 141 st street

Proposed Improvement To construct noise barriers along both sides of Route 580
(Scope)

Alternative: None

ROADWAY ITEMS	\$	3,268,717
STRUCTURE ITEM	\$	1,200,500
CONSTRUCTION SUBTOTAL	\$	4,469,217
RIGHT OF WAY (Current Value)	\$	86,500
TOTAL PROJECT COST	\$	4,555,717

Approved by
Project Manager

Signature


R. A. ANDERSON

Date 5/24/01

Phone No.

6-6155

Sheet 1 of 6

ATTACHMENT C

PRELIMINARY PROJECT COST ESTIMATE

Type of Estimate NBSSR

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

Program Code SW-HB311

I. ROADWAY ITEMS

	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>		<u>Unit Cost</u>	<u>Section Cost</u>
Section 1 Earthwork						
Roadway Excavation	60	m3	650	\$	39,000	
Imported Borrow	60	m3	60	\$	3,600	
Structure Exc. (Soundwall)	1,424	m3	20	\$	28,480	
Structure Backfill	1,000	m3	15	\$	15,000	
Clearing & Grubbing	LS	LS	45,000	\$	45,000	

Total Earthwork \$ 131,080

Section 2 Structural Section

Asphalt Concrete (Type A)	500	tonn	80	\$	40,000
Class 3 Aggregate Base	200	m3	100	\$	20,000

Total Structural Items \$ 60,000

Section 3 Drainage

Longitudinal Drainage
Lateral Drainage
Edge Drains
Under Drains
Pumping Plant

Total Drainage 0

PRELIMINARY PROJECT COST ESTIMATE

Type of Estimate NBSSR

Program Code SW-HB311

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Unit Cost</u>	<u>Section Cost</u>
Section 4 Specialty Items					
Soundwall (Barrier)(Msnry Blk)	5,900	m2	115	678,500	
Soundwall (Masonry Block)	3,740	m2	120	448,800	
Concrete Barrier (Type 27SV)	1,294	m	225	291,150	
350 mm CIDH Piling (Barrier)	845	m	120	101,400	
400 mm CIDH Piling (Barrier)	1,775	m	80	142,000	
Remove Metal Beam Guard Rail	420	m	20	8,400	
Remove Chain Link Fence	1,850	m	10	18,500	
Reconstruct Chain Link Fence	800	m	35	28,000	
Remove Concrete Sidewalk	7.3	m3	300	2,190	
Minor Concrete (Misc. Const.)	35	m3	500	17,500	
Temporary Fence	260	m	20	5,200	
Highway Planting	LS	LS	60,000	60,000	
Plant Establishment	LS	LS	30,000	30,000	
Irrigation Modification	LS	LS	40,000	40,000	
Irrigation System	LS	LS	220,000	220,000	
Residence Engineer Office Space	LS	LS	25,000	25,000	
Erosion Control	LS	LS	10,000	10,000	

Total Specialty Items \$ 2,126,640

Section 5 Traffic Items

Electrical Lighting and Sign Illumination	LS	LS	100,000	100,000	
Traffic Control System	LS	LS	30,000	30,000	
Construction Area Signs	LS	LS	5,000	5,000	
Temporary Railing (Type K)	1,350	m	50	67,500	
Temp. Crash Cushion Module	56	EA	250	14,000	

Total Traffic Items \$ 216,500

Subtotal Sections 1-5 \$ 2,594,220

PRELIMINARY PROJECT COST ESTIMATE

Type of Estimate NBSSR

Program Code SW-HB311

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

Unit Cost Section Cost

Section 6 Minor Items

Subtotal Sections 1-5 2,594,220 x (5%) \$ 129,711

Total Minor Items \$ 129,711

Section 7 Roadway Mobilization

Subtotal Sections 1-5
Minor Items
Sum x (10%)

Total Roadway Mobilization \$ 0

(Not normally required on noise barrier projects. Full compensation is included in the price of various items.)

Section 8 Roadway Additions

Supplemental Work

Subtotal Sections 1-5 2,594,220
Minor Items 129,711
Sum 2,723,931 x (5-10%) \$ 136,197

Contingencies

Subtotal Sections 1-5 2,594,220
Minor Items 129,711
Sum 2,723,931 x (15%) \$ 408,590

Total Roadway Additions \$ 544,786

Total Roadway Items (Total of Sections 1-8) \$ 3,268,717

Estimate Prepared by Vincent Tsin Phone # 510-286-4699 Date 11/20/2000

Estimate Reviewed by Andre Nguyen Phone #510-286-5658 Date 11/20/2000

PRELIMINARY PROJECT COST ESTIMATE

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

II STRUCTURE ITEMS

Bridge Name	San Leandro Creek Br.	Estudillo Ave UC Br.	Wall "M"
Structure Type	Concrete Girder Bridge	Concrete Girder Bridge	Retaining Wall
Width meter (out to out)	21	21	
Span Lengths meter	16.5-32-25.3	44	122
Total Area Sq. meter	1,551	924	
Footing Type (pile/spread)	Pile Footing	Pile Footing	Spread Footing
Cost Per Sq Meter (incl. 10% mobilization and 25% contingency)			
Total Cost for Structure	292,500	175,000	733,000
Demolish Structure Sq meter			

Subtotal Structures Items \$ 1,200,500

Total Structures Items \$ 1,200,500

Estimate Prepared by John Bither

Phone # 916-227-8605 Date 5/24/2001

Estimate Reviewed by Vincent Tsin

Phone # 510-286-4699 Date 5/24/2001

PRELIMINARY PROJECT COST ESTIMATE

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

III RIGHT OF WAY

Acquisition, including excess lands
and damages to remainders(s) \$ 85,000

Utility Relocation (State share) \$ 1,500

Clearance/Demolition

RAP

Title and Escrow Fees

Subtotal \$ 86,500

Contingencies

Subtotal

Total Right of Way \$ 86,500

Construction Contract Work

Estimate Prepared by Lynn White

Phone # 510-286-5444 Date 3/19/2001

Estimate Reviewed by Lawrence J. Appiano

Phone # 510-286-5400 Date 4/25/2001

04-ALA-580-33.5/34.6
4173-126200
Soundwall

CATEGORICAL EXEMPTION/EXCLUSION DETERMINATION

PROJECT DESCRIPTION

The project consists of the construction of 10 to 16 foot high soundwalls on both sides of Route 580 between postmiles 33.5 and 34.6 from 141st Street to Estudillo Avenue in the City of San Leandro, County of Alameda. All work will take place within the existing right-of-way.

ENVIRONMENTAL SETTING

Urban

DETERMINATION

This project has been identified as a Class 1 Categorical Exemption under the Caltrans Environmental Regulations on the basis of a determination that the project, by its nature, clearly meets the criteria for exemption.

It is recommended that this project be determined to be a Categorical Exclusion in accordance with 23 CFR 771.



Senior, EA Branch

6/28/11

Date

Chief, Originating Branch Date

FHWA Representative

Date

ATTACHMENT D

State of California
Department of Transportation
District 4 - Oakland

4-Ala-580-KP 53.9/55.7
4-334-126200



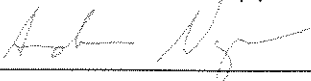
Traffic Noise Impact Report



On Route I-580
In
Alameda County

From 141th Street to Estudillo Avenue
In
The City of San Leandro

Recommend for Approval by

 1/5/01
Andre H. Nguyen Date

District Branch Chief
Office of Environmental Engineering

Approved By

 1/5/01
Ronald M. Moriguchi Date

District Office Chief
Office of Environmental Engineering

ATTACHMENT E

Acknowledgements

The following individuals contributed to this report:

Victor Zeuzem – Senior Transportation Engineer
Andre Nguyen – Transportation Engineer
Text, Computer Modeling, Field Measurements, Exhibits

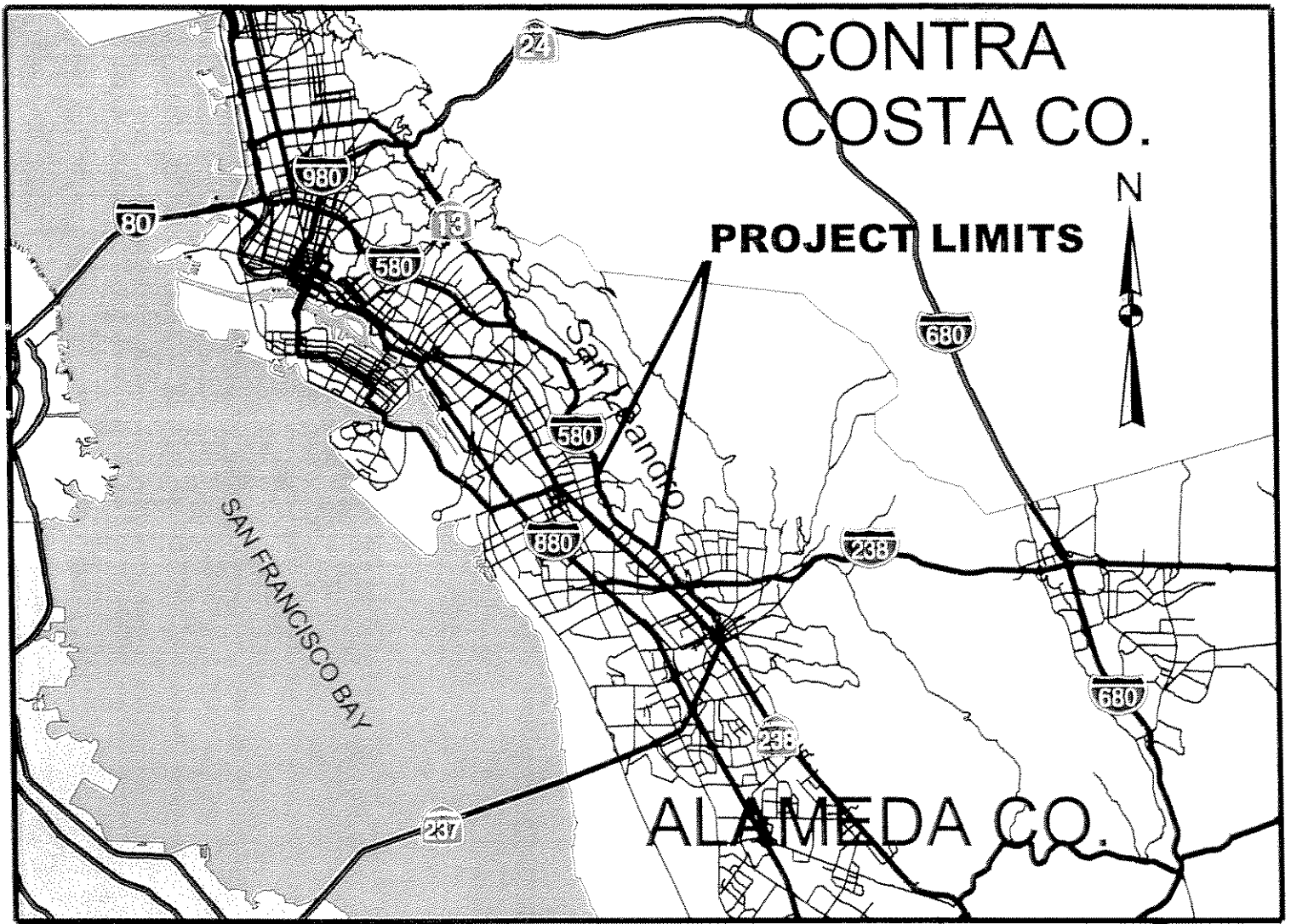
Special thanks to Rudy Hendriks

TABLE OF CONTENTS

LOCATION MAP	4
INTRODUCTION	5
PURPOSE OF NOISE REPORT	5
PROJECT DESCRIPTION	5
LAND USE AND TERRAIN	5
TRAFFIC NOISE IMPACTS	5
EXISTING AND FUTURE TRAFFIC	6
EXISTING NOISE LEVELS	7
FUTURE PREDICTED NOISE LEVELS	7
NOISE ABATEMENT CONSIDERED	7
<i>Westbound Direction:</i>	8
<i>Eastbound Direction:</i>	8
NOISE ABATEMENT NOT CONSIDERED	8
<i>Westbound Direction:</i>	9
<i>Eastbound Direction:</i>	9
STANDARD NOISE POLICY AND TECHNICAL GUIDELINES.....	10
STIP REFORM, SB45.....	10
EXISTING NOISE LEVELS	10
FUTURE PREDICTED NOISE LEVELS.....	10
CONSTRUCTION NOISE	11
INSTRUMENTATION.....	11
APPENDIX	I
EXISTING NOISE ENVIRONMENT.....	I
A-WEIGHTING, NOISE LEVELS	I
SOUND PROPAGATION	I
GEOMETRIC SPREADING FROM POINT AND LINE SOURCES.....	I
GROUND ABSORPTION	II
ATMOSPHERIC EFFECTS AND REFRACTION.....	II
SHIELDING, NOISE BARRIERS, DIFFRACTION AND REFLECTION.	II
HUMAN REACTION TO NOISE	III
HUMAN RESPONSE TO CHANGE IN NOISE LEVELS	III
NOISE DESCRIPTORS.....	III
NEGATIVE EFFECTS ON HUMANS.....	IV
STUDY METHODS AND PROCEDURES.....	V
GLOSSARY	VI
BIBLIOGRAPHY	VIII
TABLES	IX
Table A Summary of Sound Wall Locations and Costs	
Table B Summary of Noise Readings	
Table C-1 Barrier Heights and Corresponding Noise Levels (Westbound)	
Table C-2 Barrier Heights and Corresponding Noise Attenuation (Westbound)	
Table D-1 Barrier Heights and Corresponding Noise Levels (Eastbound)	
Table D-2 Barrier Heights and Corresponding Attenuations (Eastbound)	

EXHIBITS.....	X
COMMON INDOOR AND OUTDOOR NOISE LEVELS	XI
RELATIVE LOUDNESS	XII
NOISE ABATEMENT CRITERIA	XIII
A - Noise Barrier Location Map	
B - Noise Impact Study Map	
C - Typical Cross Sections	
D - Proposed Westbound 580 Sound Walls	
D - Proposed Eastbound 580 Sound Walls	
E - Traffic Assumption for TNM Model	
F - Line of Sight Check for Truck Stacks	
G - 24-hr Noise Profile (Westbound)	
G - 24-hr Noise Profile (Eastbound)	
Actual Noise Measurement Data	
Project Cost estimate	

Location Map



LOCATION MAP

Introduction

Purpose of Noise Report

The purpose of this report is to reevaluate traffic noise impacts in the study area at the request of the Alameda County Congestion Management Agency (ACCMA). As a result of the implementation of a new noise policy by the Alameda County Congestion Management Agency (ACCMA). The programming of STIP funds to soundwall projects in Alameda County, previously guided by the Caltrans Community Noise Abatement Program (HB311), is now performed by the ACCMA, and the transfer of the Caltrans Community Noise Abatement Program (HB311) in Alameda County over to the ACCMA. The original project scope identified 6 sound walls to be built as part of the Caltrans HB311 program in the December 1992 Noise Barrier Scope Summary Report (NBSSR). This will serve as the formal Technical Noise Impact Report needed to accompany the updated NBSSR for the project.

Project Description

This project proposes the construction of 4 sound walls on eastbound Route 580 and 6 on westbound Route 580 from 141st Street to Estudillo Avenue in the City of San Leandro, Alameda County.

Land Use and Terrain

The northern and southern portions of route 580 corridor within these project limits consist primarily of residential subdivisions with relatively flat grades and rolling terrain. Both sides of route 580 are lined with thick, dense shrubs and short trees. The existing residential development next to the highway is relatively old and tightly spaced along both directions of route 580. The homes along westbound 580 are largely on top of the slope, whereas the ones on the eastern edge are at the bottom. Most of these homes are single residential, except for a two-story apartment complex (Redwood Grove) on Grand/Delores. There is also a school (Fairmont Elementary) in the southern portion of this project and a hospital (Vencor Hospital) on the eastern side.

Traffic Noise Impacts

Traffic noise impacts occur, when future predicted noise levels increase by 12 decibels as the result of the project or approach the noise abatement criteria (NAC) of 67 dBA, Leq (h) for activity category 'B' as defined in Table 1- 23 CFR, 772 (FHWA). The term 'approach' is defined by Caltrans as one dBA below the criterion. For example, a site with future predicted noise levels of 66 dBA, Leq (h) would qualify for consideration of noise abatement. Although the project will increase noise levels 1-2 dBA at nearby residences, a change of three dBA has been found barely perceptible by the healthy, human ear. However, future predicted noise levels immediately adjacent to the freeway will approach or exceed 67 dBA, Leq(h) at 16 sites and noise abatement in the form of noise barriers has therefore been considered.

For the purpose of this report, activity category 'B' as described in Table 1 - 23 CFR, 772 (FHWA) is used to determine traffic noise impacts and abatement. The Noise Abatement

Criteria (NAC) for Category 'B' is 67 dBA, Leq (h) and includes picnic areas, recreation areas, playgrounds, active sport areas, residences, motels, hotels, schools, churches, libraries, and hospitals. Table 1- 23 CFR, 772 (FHWA) is included in the Appendix.

Existing and Future Traffic

Route 580 is a well traveled 8 -lane interstate freeway, with commuting direction going westbound in the morning and eastbound in the evening. Based on the 1999 traffic data, approximately 12, 000 vehicles per hour (VPH) traverse this section of the project during the peak commute hours : 8AM to 9AM in the morning and 5PM to 6PM in the evening.

There is no proposal to increase capacity via lane addition project in the near future, however, projected volume increase in the AM and PM peak traffic will occur in 2010 with the built option of the I-238 highway project. The potential increase is from Caltrans traffic projection study for the 238/580 project:

Scenario	AM Peak (VPH)				PM Peak (VPH)			
	WB	Change	EB	Change	WB	Change	EB	Change
With 238 built	7100		6200		6300		7300	
		+200		+200		+100		+300
No 238 built	6900		5900		6200		7000	
		+300		+500		+300		+100
2000 Forecast	6600		5400		5900		7100	
TNM Use	7200		7200		7200		7200	

Source: Traffic Forecasting

Ramp volumes are taken from 1999 Caltrans Ramp Volumes data and converted to hourly count for modeling purpose (see Exhibit E).

There is a truck ban in effect, prohibiting any vehicle over a gross weight of 9000 pounds from being operated on the roadway segment between Grand Ave. in the City of Oakland and the city limits of San Leandro. However, trucks over 9000 pounds still traverse this segment of the interstate as periodic, random truck counts reveal. This is taken into consideration in the TNM model, in addition to using traffic forecasting data. Which truck volume to use for modeling is based on the selection of the volume of medium and heavy trucks that correspond to a noisiest hour of the day (in this case 7:00 AM to 8:00 AM and 9:00AM to 10:00AM in the morning for both directions, and 6PM to 7 PM in the evening. – (see Exhibit G). The noisiest hour of the day tends to occur right before or after the commute hours. This is the basis for the selection of truck volume as indicated in the accompanying table:

EASTBOUND (VPH)					WESTBOUND (VPH)				
HOUR	2AX	3AX	4AX	5AX+	HOUR	2AX	3AX	4AX	5AX+
8-9	39	1	2	11	8-9	62	7	1	17
9-10	42	0	1	9	9-10	88	4	2	23
10-11	38	1	2	8	10-11	52	7	1	13
11-noon	37	0	2	15	11-noon	57	4	0	10
12-1	41	4	1	19	12-1	51	3	1	12
1-2	38	2	0	13	1-2	49	3	0	11
TNM Use	39	1	2	11	TNM Use	88	4	2	23

Source: Caltrans Highway Inventory

Traffic parameters for modeling are summarized in **Exhibit E**.

Existing Noise Levels

Existing noise levels were determined through field measurements and adjusted upward to reflect the noisiest hour of the day. Measurements were conducted at exterior areas such as yards or frontages of residences facing the freeway. Preliminary noise readings and readings used for model calibration are summarized in the (see **Table B**). All noise readings use the descriptor $Leq(h)$.

Future Predicted Noise Levels

Future predicted noise levels with and without noise abatement were calculated through computer modeling. Input parameters consisted of hourly traffic volumes (both directions). Based on either an actual traffic projection study or field observations and trends on major Bay Area freeways, or a combination of both (as discussed in the previous section), a speed of 105 km/hr (65 mph) and an hourly volume of Level of Service C (2000 vehicles per hour per lane), a combination of which includes the following vehicle classifications:

- Passenger vehicles
- Medium trucks (2 axles or less)
- Heavy trucks (3 axles or more)
- Buses
- Motorcycles

were used in all modeling scenarios to predict the future noisiest hour of the day. For local streets, posted speed limits and 1,500 vehicles per lane per hour were applied. When feasible, field readings were compared with computed values for model validation. Existing and future noise levels, barrier dimensions, noise attenuation and other details are shown for all receptors (see **Table C-1, C-2, D-1, and D-3**)

Noise Abatement Considered

Noise abatement in the form of noise barriers has been considered at locations where future predicted noise levels approach or exceed the noise abatement criteria of 67 dBA, $Leq(h)$ for residential areas. Where feasible, the barrier should break the line of sight between a receptor 1.5 meters (5') above ground and a truck stack, assumed to be 3.5 meters (11.5') above the

pavement (see Exhibit F) Minimum height of noise barriers is 1.8 meters (6'); maximum height at the edge of shoulder is 4.3 meters (14') and 4.9 meters (16') at the R/W line.

The views (opinions) of residents directly impacted by the noise barrier under consideration shall be a major factor in noise abatement determination. An impacted resident is defined as any residence receiving a noise reduction of at least five (5) decibels. More than 50% of impacted residents must support the proposed noise barrier construction. Should controversy arise, Caltrans may elect to request the local governing body to mediate and if necessary, submit an approved resolution to the State, whether or not to proceed with construction of the noise barrier(s).

Westbound Direction:

Between Admore Drive and Grand Avenue (Wall # 9)

3.0m x 178m (10' x 584') at R/W line and hinge point (top of slope). The homes are located above the freeway and are directly exposed to traffic, thereby got over 68 dBA. (see Exhibit B & D)

On Benedict Drive between Grand/Hillside (Wall # 3,4,5, and 6)

3.0m to 4.9m (10' to 16') in height and 1057m (3468') in length. This is basically a continuous wall but varies in height to break the truck stack line of sight. The homes are located on top of slope. (see Exhibit B & D)

Eastbound Direction:

On EB 580 between Maud/Dolores Avenues (Wall # 10)

3.7m x 222m (10' x 728') at ES. The receptor is a two-story, 48 unit apartment complex (Redwood Grove), with 11 top and 11 bottom units facing the highway (see Exhibit B & D).

On Grand Avenue between Kenyon/Emerald Avenues (Wall # 8)

3.7m x 521m (12' x 1710') between R/W line and ES. The homes here are below the highway. Receptor # 92, 93, 94, and 95 face route 580 at an angle, thus stopping wall # 8 at Grand Avenue overcrossing will not provide the necessary 5 dBA abatement. Due to the slanted position of these homes, it is recommended that wall # 8 be extended and join wall # 2 to provide the necessary minimum attenuation. Additionally, leaving a gap between wall # 2 and # 8, 600' long is visually intrusive and not a good design practice. The nearby Church of Assumption will get noise abatement as well. (see Exhibit B & D)

On EB 580 between Lopez Drive and Russ Avenue (Wall # 1, 2, and 7)

3.7m (12') in height and 707m (2320') in length. This is basically a continuous wall but varies in location of placement: Wall # 2 will run along the R/W line and Wall # 1 and 7 at the ES. The homes here are relatively lower than the adjacent highway. (see Exhibit D)

Noise Abatement Not Considered

Noise abatement was not considered for locations outside of the original project scope limits and commercial areas.

At some locations, receptors do not qualify for noise abatement based on their existing noise levels. If readings do not approach 67dBA, after adjustments are made for local street and peak traffic noise, no further investigation is warranted.

Westbound Direction:

Sherry to Gabriel Avenue

Measured noise levels adjacent to the freeway ranged from 60 to 63 dBA, Leq (h). These noise levels are below the NAC of 67 dBA, Leq (h) and therefore no noise abatement is required.

Eastbound Direction:

150th to Russ Avenue

Existing noise levels are 62 dBA, Leq(h), below the NAC of 67 dBA and therefore are not eligible for abatement.

Delores Avenue to Collier Drive

This area is largely commercial and is therefore not considered for noise abatement.

Standard Noise Policy and Technical Guidelines

STIP Reform, SB45

The California Department of Transportation (Caltrans) had a Community Noise Abatement Program (HB311) to prioritize and ultimately construct soundwalls along existing freeways under Section 215.5 of the California Streets and Highways Code. The program has undergone sweeping change under SB45, which fundamentally changes the way soundwall projects are programmed and administered. SB45 repealed the separate programming element for soundwalls, and shifted programming authority to local Regional Transportation Planning Authorities (RTPAs). RTPAs, at their option, can fund soundwall projects in their RTIP. They may also set different qualifying criteria or programming priorities.

Existing Noise Levels

Existing noise levels were determined through field measurements and adjusted upward to reflect the noisiest hour of the day. Where noise levels were found to be at or below 62 dBA, no further studies were conducted as outlined in the TNAP. Measurements were conducted at exterior areas such as yards or frontages of residences facing the freeway. Preliminary noise readings and readings used for model calibration are summarized in **Table B**. All noise readings use the descriptor Leq (h). An exhibit depicting common indoor and outdoor noise levels and another exhibit demonstrating relative noise levels can be found in the Appendix as well. All noise values use the descriptor Leq (h).

Future Predicted Noise Levels

Future predicted noise levels with and without noise abatement were calculated through computer modeling. Input parameters consist of hourly traffic volumes including automobiles, medium and heavy-duty trucks, buses and motorcycles. Based on field observations and trends on Bay Area freeways, a speed of 105 km/hr (65 mph) and an hourly volume of 1800 passenger vehicles per lane per hour (in both directions) as well as projected medium and heavy trucks were used in all modeling scenarios to represent the noisiest hour of the day. Modeling considered traffic speeds, roadway grade, terrain configuration, type of groundcover, vegetation, natural and man-made shielding as well as existing noise barriers. When feasible, field readings were compared with computed values for model validation.

Federal Highway Administration's (FHWA) Traffic Noise Model (TNM) Version 1.0b was approved March 1998 for highway traffic noise prediction and analysis. TNM computes highway traffic noise at nearby receivers and aids in the design of highway noise barriers. As sources of noise, it includes 1994-95 noise emission levels for automobiles, medium trucks, heavy trucks, buses and motorcycles. Noise emission levels consist of A-weighted sound levels. In addition, TNM includes full-throttle noise emission levels for vehicles on upgrades and vehicles accelerating away from traffic-control devices such as stop signs, toll booths, traffic signals and on-ramps. TNM combines these full-throttle emission levels with its internal speed computations to account for the full effect (noise emissions plus speed) of roadway grades and traffic-control devices.

Construction Noise

Noise levels from construction activities will be higher at times than currently existing noise levels. Incorporating the following measures in the plans and specifications can minimize these temporary impacts:

- The consideration of constructing noise barriers as first items of work, where feasible.
- Use of stock piled dirt as earthen berms to attenuate the impact of construction activities.
- Avoid construction activities during nighttime and week-ends, when possible.
- Establishment of a field office to handle noise complaints and keep the community informed of upcoming especially noisy construction activities.
- The enforcement of Section 7-1.01I, "Sound Control Requirements" of the Standard Specifications.

Instrumentation

Noise measurement is performed using Metrosonic, Inc Model 3100 sound level meter, set for various time intervals and sampling speeds. The frequency weighting network applied for normal transportation noise sampling is A-scale. Field calibration using a Metrosonic Acoustical Calibrator, CL-304, is performed before each measurement.

The Metrosonic Inc. Model 3100 logger's specifications satisfy the American National Institute of Standards (ANSI) s1.4-1983 and s1.4N-1985 for type 2 meter. A calibration and certification of Model CL-304 calibrator is done every two years by Odin Metrology, Inc. of Thousand Oaks, CA.

Appendix

Existing Noise Environment

Existing noise levels were recorded within the project limits through short-term measurements. A 24-hour measurement was conducted in each direction of route 580 to determine the noisiest hour of the day and to develop a noise profile for that direction (see Exhibit G). The short-term measurements were then adjusted upward, where appropriate, to reflect the noisiest hour of the day throughout the project limits.

A-Weighting, Noise Levels

In general, the human ear is most sensitive to sounds between 1,000 Hz to 5,000 Hz and perceives higher and lower frequency sounds of the same magnitude with less intensity. In order to approximate the frequency response of the human ear, a series of sound pressure level adjustments is usually applied to the sound measured by a sound level meter. The adjustments, or weighting network, are frequency dependent.

The A-scale approximates the frequency response of the average young ear when listening to most ordinary everyday sounds. When people make relative judgements of the loudness or annoyance of a sound, their judgement correlate well with the A-scale sound levels of those sounds. For highway traffic noise, only the A-Scale is used. Other scales are the B-Scale, C-Scale and D-Scale). The A-weighted scale is used worldwide to address environmental noise and is incorporated in virtually all environmental noise descriptors and standards.

Wavelengths serve to determine the effectiveness of noise barriers. Low frequency noise, with its long wavelengths, passes easily around and over a noise barrier with little loss in intensity. For example, a 16 Hz noise with a wavelength of 70 feet (21m) will tend to pass right over a 5 meter (16') high noise barrier. Fortunately, A-weighted traffic noise tends to dominate in the 250 to 2000 Hz range with wavelengths in order of 0.6 to 4.5 ft (0.2 to 1.4m). Noise barriers are less effective at lower frequencies and more effective at higher ones. Some evidence suggests that changes in frequencies are sometimes perceived as changes in noise levels, even though the total A-weighted noise levels do not change significantly.

Sound Propagation

From the source to the receiver noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on the following important factors:

Geometric spreading from point and line sources

Sound from a small, localized source, approximating a point source, radiates uniformly outward as it travels away from the source in a spherical pattern. For a point source the energy per unit area is inversely proportional to the square of the distance. The sound level attenuates or drops off at a rate of 6 dBA for each doubling of the distance. However, highway traffic noise is not a single, stationary point source of sound. The movement of the vehicles makes the sound appear to emanate from a line rather than a point when viewed over some time interval.

This results in cylindrical spreading rather than spherical spreading of a point source. Since the change in surface area of a cylinder only increases by two times for each doubling of the radius instead of the four times associated with spheres, the change in sound level is 3 dBA per doubling of distance.

Ground absorption

Most often, the noise path between the highway and the observer is very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation due to geometric spreading. The amount of excess ground attenuation depends on the height of the noise path and the characteristics of the intervening ground or site. This ground attenuation may vary from 0 to 10 dBA per doubling of distance.

Atmospheric effects and refraction

Research by Caltrans and others has shown that atmospheric conditions can have a profound effect on noise levels within 200 feet (60m) from a highway. Wind has shown to be the single most important meteorological factor within approximately 500 feet (150m) while vertical air temperature gradients are more important over longer distances. Other factors such as air temperature and humidity, and turbulence, also have significant effects. Normally, air temperature decreases with height above the ground. This is called the normal lapse rate, which for dry air is 1 degree C per 100m. Since the speed of sound decreases as air temperature decreases, the resulting temperature gradient creates a sound velocity gradient with height. The result is a decrease in noise. Under certain stable atmospheric conditions, however, temperature profiles are inverted. This inversion results in speeds of sound that temporarily increase with altitude resulting in an increase in noise. Noise trapped within an elevated inversion layer may be carried over long distances.

Shielding, noise barriers, diffraction and reflection.

For a vegetative strip to have a noticeable effect on noise levels it must be dense and wide. A stand of trees with a height that extends at least 16 feet (5m) above the line of sight between source and receiver, must be at least 100 feet (30m) wide and dense enough to completely obstruct a visual path to the source to attenuate traffic noise by 5 dBA. Ordinary landscaping along a highway accounts for less than 1 dBA reduction. The first row of buildings, covering at least 40% of the area, will reduce noise levels in the second row by about 3 dBA. Successive rows will reduce noise 1.5 dBA. When a noise barrier is inserted between a noise source and receiver, the direct noise path along the line of sight between the two is interrupted. Some of the acoustical energy will be transmitted through the barrier and continue to the source at a reduced level. The amount of this reduction depends on the material's mass and rigidity and is called the transmission loss. For instance if 1 percent of the noise energy striking the barrier is transmitted,

$$TL = 10 \log_{10} (100/1) = 20 \text{ dBA.}$$

Most noise barriers have TLs of 30 dBA or more. That means that only 0.1 percent of the noise energy is transmitted. The remaining direct noise is either partially or entirely absorbed by the noise barrier material or reflected back toward the source and beyond. Ignoring the

difference in path lengths between the direct and reflected noise, the maximum expected increase in noise will be 3 dBA. Sound waves are also diffracted or bent by the sound wall creating a shadow zone behind the barrier. Barriers are more effective in attenuating higher frequencies than lower frequencies. The greater the angle of diffraction, the greater the noise attenuation.

Human Reaction to Noise

Rock music may be pleasant to some people while for others it may be annoying, constitute a health hazard and disrupt activities. Exposure to very high noise levels can damage hearing. Intermittent truck peak noise levels are more objectionable than the continuous level of fan noise. Humans have better hearing sensitivity in the high frequencies. People tend to compare an intruding noise with the existing background noise. If the new noise is readily identifiable or considerably louder than the ambient, it usually becomes objectionable. An aircraft flying over a residential area is an example. An automobile horn at 2 AM is more disturbing than at 5 PM.

Human Response to Change in Noise Levels

Under controlled conditions the trained healthy human ear is able to discern changes in sound levels of 1 dBA, when exposed to steady, single frequency (pure tone) signals in the mid-frequency range. A 3 dBA change is considered barely perceptible, a 5 dBA change is readily noticeable, and a 10 dBA increase is considered twice as loud.

Noise Descriptors

There are dozens of descriptors and scales which have been devised over the years to quantify community noise, aircraft fly-overs, traffic noise, industrial noise, speech interference, etc. Some of the most commonly used descriptors are:

L_{max} (Maximum Noise Level). The highest instantaneous noise level during a specified time period.

L_x (A Statistical Descriptor). The noise level exceeded X percent of a specified time period. The value is commonly 10. Values of L_{50} and L_{90} are also used.

L_{eq} (Equivalent Noise Level. Used by Caltrans and FHWA to address the worst hour). The equivalent steady state noise level in a stated period of time that would contain the same acoustic energy as the time varying noise level during the same period.

L_{dn} (Day-Night Noise Level. Used commonly for describing community noise). A 24-hour L_{eq} with a 'penalty' of 10 dBA added during the night hours (2200 hrs – 0700 hrs). The penalty is added because this time is normally sleeping time.

CNEL (Community Noise Equivalent Level. A common community noise descriptor; also used for airport use). Same as L_{dn} with an additional penalty of 4.77 dBA (or $10\log 3$) for the hours 1900 – 2200 hrs, usually reserved for relaxation, TV, reading and conversation.

SEL (Single Event Level. Used mainly for aircraft noise, it enables comparing noise created by a loud, but fast overflight, with that of a quieter, but slow overflight). The acoustical energy during a single noise event, such as aircraft overflight, compressed into a period of one second, expressed in decibels.

Noise levels can be converted from one descriptor to another. As a rule of thumb, L_{dn} is approximately (within 2 dBA) equal to the highest hourly L_{eq} noise level.

Negative Effects on Humans

A person exposed to high noise levels can suffer hearing damage. The damage may be gradual or traumatic. Sustained exposure to moderately high noise levels over a period of time can cause gradual hearing loss. It starts out as a temporary hearing loss, such as immediately after a loud rock concert. The hearing usually restores itself within a few hours after exposure, although not quite to its pre-exposure level. This is also called a temporary threshold shift. Although the permanent deterioration may be negligible, it will become significant after many repetitions of the exposure. At that time, it is labeled permanent hearing damage. The main causes of permanent damage are daily exposure to industrial noise. Transportation noise levels experienced by communities and the general public are normally not high enough to produce hearing damage. Short and sudden exposure to an extremely high noise level, such as a gun shot or explosion at very close range can cause a traumatic hearing loss, which can be permanent. Occupational exposure to noise is controlled by OSHA and is based on a maximum allowable noise exposure level of 90 dBA for 8 hours. For each halving of the exposure time, the maximum noise level is allowed to increase by 5 dBA.

As a rough guide, two people 6 meters (20') apart can carry on a normal conversation, if the background noise level is about 50 dBA. If the background level increases to 60 dBA, the distance between the speakers must decrease to about 3 meters (10'). Noise can create stress and contribute to stress related diseases. In general, higher frequency, pure tone and fluctuating noise tend to be more stressful than lower frequency, broad band and constant noise level.

For a discussion on noise measurements, instrumentation, model calibration, construction noise levels, measurement locations, special studies, documentation, meteorology, classroom noise measurements, frequency analysis and quality assurance, refer to the publication 'Technical Noise Supplement' (TeNS), October 1998 by Caltrans.

Study Methods and Procedures

Existing and reasonably expected future activities on all lands that may be affected by noise from the highway must be identified. Existing activities, developed lands and undeveloped lands for which development is planned, designed and programmed, which may be affected by noise from the highway are analyzed. Development is considered planned, designed and programmed, if a noise sensitive land use (subdivision, residences, schools, churches, hospitals, libraries) has received final development approval (generally the issuance of a building permit) from the local agency with jurisdiction.

Determine existing noise levels
Select Receivers and noise measurement sites
Model existing noise levels
Calibrate model
Traffic mix, speeds and volumes
Drop-off rates and distances
Opaque barriers
Line of sight truck stack interception
Roadway and barrier segment adjustments
Future noise levels
Reference Energy Mean Emission Levels (REMELs)
Parallel barriers

Glossary

Automobile - Vehicles with two axles and four wheels, generally weighing less than 4500 kg (10,000 pounds) gross weight, including passenger cars, vans and pick-ups.

Bel - A unit used to express loudness, named after Alexander Graham Bell.

dBA - The sound pressure level in decibels measured with a sound level meter having a frequency-weighted network corresponding to the A-Scale used as a standard by the American National Standards Institute (ANSI). The A-Scale tends to suppress lower frequency sounds below 1000 Hertz (Hz) and higher frequencies above 4000 Hz. This correlates well with human hearing response.

Decibel (dB) - One-tenth of a Bel. A unit of measure on a logarithmic scale which denotes the ratio between an air pressure level caused by a given sound and a standard pressure level, usually 0.0002 dynes per square-centimeter.

Existing Noise Levels - The noise resulting from the natural and mechanical sources and human activity, considered to be usually present in a particular area.

Frequency - The number of times the complete wave form (cycle) of an airborne sound pressure level oscillates during one second, referred to as cycles per second or Hertz (Hz).

Heavy Duty Truck (HDT) - Vehicles with three or more axles, generally weighing over 12,000 kg gross weight, including tractor-trailers and concrete-transit mixers.
Noise centroid height: 2.4m.

Leq (Equivalent Average Level) - A descriptor of sound. It is the equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the real fluctuating sound levels during the same period, usually one hour, and expressed as Leq(h).

Loudness - The perceived magnitude of an auditory sensations, that in terms of sound, may be placed on a graduated scale extending from soft to loud. Loudness depends primarily upon the sound intensity of the stimulus, but also depends upon the frequency and wave form of the stimulus. At levels above 40 dB, a 10 dB increase is subjectively judged by the human ear as equal to a doubling of the original loudness.

Medium Duty Truck (MDT) - Vehicles with two axles and six wheels, generally weighing more than 4500 kg, but less than 12,000 kg (26,500 pounds) gross weight, including large delivery trucks, vans and buses. Centroid height: 0.7m.

Meter - The basic unit of measurement in the metric system.

To convert feet to meters, multiply feet by 0.3048

To convert meters to feet, divide meters by 0.304

Noise - Noise is defined as unwanted sound.

Noise Level - Resultant level of measured frequency weighted sound levels or resultant of computer calculations.

Receptor - A location for noise measurements or a site to compute noise levels.

Sound - The auditory sensation produced when the organs of hearing transform mechanical energy transmitted by airborne pressure variations (sound waves) into an electric signal which is transmitted via nerve pathways to the brain. Not all sound waves cause auditory sensations, for example, ultrasound frequencies.

Bibliography

California Noise Barriers, Office of Project Planning and Design and The Transportation Facilities Enhancement Office, State of California, 1992

California Vehicle Noise Emission Levels, Office of Transportation Laboratory, California Department of Transportation, FHWA/CA/TL-87/03, January 1987

FHWA Highway Traffic Noise Prediction Model, Report FHWA-RD-77-108, U.S. Department of Transportation, Federal Highway Administration, December 1978

Highway Design Manual, 5th Edition, Chapter 1100, Highway Traffic Noise Abatement, California Department of Transportation, July 1, 1995.

Technical Analysis Notes, Department of Transportation, Division of New Technology, Materials and Research, 2nd Draft, March 1991
Procedures for Abatement of Highway Traffic Noise and Construction Noise, Code of Federal Regulations, Title 23, Part 772, 1982

1993 Traffic Volumes on California State Highways, State of California Business, Transportation and Housing Agency, Department of Transportation, Division of Traffic Engineering, Sacramento, 1994

Project Development Procedures Manual, Chapter 3-150, Highway Traffic Noise Abatement, May 1, 1995.

TABLES

Table A Summary of Sound Wall Locations and Costs

Table B Summary of Noise Readings

Table C-1 Barrier Heights and Corresponding Noise Levels (Westbound)

Table C-2 Barrier Heights and Corresponding Noise Attenuation (Westbound)

Table D-1 Barrier Heights and Corresponding Noise Levels (Eastbound)

Table D-2 Barrier Heights and Corresponding Attenuations (Eastbound)

TABLE A

**Summary of Sound
Wall Locations Costs**

WALL NO.	DIR	DESCRIPTION	LOCATION	HEIGHT (FT)	LENGTH (FT)	HEIGHT (m)	LENGTH (m)	BARRIER COST	STRUCTURE COST	R/W COST	WALL COST	NO. of HOMES	COST per HOME
1	EB	140th/143rd Ave.	ES	12	305	3.7	93	\$116,789	\$0	\$5,000	\$121,789	11	\$11,072
2	EB	On Velarde between 140th/Lopez	R/W	12	1010	3.7	308	\$386,744	\$0	\$5,000	\$391,744	5	\$78,349
3	WB	On Benedict between Scenic View/Estudillo	ES	10	1731	3.0	528	\$552,354	\$902,056	\$5,000	\$1,459,410	18	\$81,078
4	WB	On Benedict between Grand/Hillside	R/W	12	397	3.7	121	\$152,017	\$0	\$5,000	\$157,017	5	\$31,403
5	WB	On Benedict between Scenic View/Hillside	R/W	12	641	3.7	195	\$245,448	\$0	\$5,000	\$250,448	10	\$25,045
6	WB	On Benedict between Scenic View/Hillside	R/W	16	700	4.9	213	\$357,387	\$0	\$5,000	\$362,387	10	\$36,239
7	EB	On Kingsway between Russ/143rd	ES	12	1005	3.7	306	\$384,829	\$0	\$5,000	\$389,829	3	\$129,943
8	EB	On Grand between Kenton/Emerald	R/W	12	1710	3.7	521	\$654,784	\$0	\$5,000	\$659,784	23	\$28,686
9	WB	On Benedict between Admore/Grand	R/W	10	584	3.0	178	\$186,352	\$0	\$5,000	\$191,352	6	\$31,892
10	EB	Redwood Grove Apartment	ES	10	728	3.0	222	\$232,301	\$0	\$5,000	\$237,301	22	\$10,786
SUBTOTAL								\$3,269,005	\$902,056	\$50,000	\$4,221,061	113	\$37,355

Total Roadway Items:

\$3,269,005

Total Structure Items:

\$902,056

Subtotal Construction Costs

\$4,171,061

Total Right of Way Items

\$50,000

Total Project Capital Outlay Costs

\$4,221,061

Note: Wall costs are estimated

TABLE B
Summary of Noise Readings

Receiver No.	Description	Dir	Date	Time	Unadjusted Reading	Local Traffic	Adjusted for Peak Noise (24-Hr)	Final Adjusted
						dBA-Leq (h)		
n/a	148/Wake	EB	12/04/00	12:30-12:45	62	0	3	65
134	Russ/School	EB	12/07/00	12:00-12:15	68	-1	3	70
127	143/King	EB	10/08/97	11:40-11:55	69	0	3	72
110	On Velarde	EB	10/18/00	24-HR	78	0	0	78
95	Fulton/Evergreen (far)	EB	12/07/00	12:20-12:40	61	-1	3	63
91	Fulton/Evergreen (near)	EB	12/07/00	12:45-13:00	67	0	3	70
75	Evergreen/Sybil	EB	10/08/97	13:30-13:50	71	0	4	75
61	Redwood Grove Apt.	EB	12/04/00	12:00-12:15	74	0	3	77
49	Bridge/Collier	EB	12/07/00	13:30-13:45	71	-2	2	71
190	Montrose/Benedict	WB	12/04/00	11:45-12:00	67	0	3	70
175	Vista Grand/Benedict	WB	10/15/97	11:30-11:31	60	-2	3	60
136	Admore/Benedict	WB	12/04/00	11:30-11:45	63	-2	3	63
34	Estudillo/Benedict	WB	12/07/00	13:00-13:20	70	-1	3	71
19	Norren/Benedict	WB	10/15/97	11:41-11:44	69	-1	3	71
3	On Benedict	WB	10/18/00	24-HR	79	0	0	79

TABLE C-1
Barrier Heights and Corresponding Noise Levels
(WESTBOUND 580)

Wall No.	Receiver No.	No Wall		With Wall							
				dBA-Leq (h)							
		Existing	Future	H=3.0m (10')	H=3.4m (11')	H=3.7m (12')	H=4.0 (13')	H=4.3m (14')	H=4.6m (15')	H=4.9m (16')	
	170	60				** Not eligible **					
	171	60				** Not eligible **					
	172	60				** Not eligible **					
	173	60				** Not eligible **					
	174	60				** Not eligible **					
	175					** Not eligible **					
	176	61				** Not eligible **					
	177	61				** Not eligible **					
	178	61				** Not eligible **					
	180	61				** Not eligible **					
	181	62				** Not eligible **					
	182	62				** Not eligible **					
	184	62				** Not eligible **					
	185	63				** Not eligible **					
	186	63				** Not eligible **					
	187	63				** Not eligible **					
	136					** Not eligible **					
	138	62				** Not eligible **					
	139	62				** Not eligible **					
	140	62				** Not eligible **					
	141	62				** Not eligible **					
	143	62				** Not eligible **					
	144	62				** Not eligible **					
	146	62				** Not eligible **					
	147	62				** Not eligible **					
9 (R/W)	190		82	68	67	67	66	66	66	66	
	191	71	79	69	68	68	68	67	68	67	
	192	73	80	70	70	69	69	69	69	68	
	193	75	79	71	71	71	70	70	70	70	
	194	77	82	73	73	73	73	73	73	73	
4 (R/W)	148	66	72	69	69	69	69	69	69	69	
	150	67	73	68	68	68	68	68	68	68	
	151	67	73	68	68	67	67	67	67	67	
	152	69	79	69	68	67	67	66	65	65	
	153	72	82	68	68	67	66	66	65	65	
	154	72	82	69	68	67	66	66	65	65	

TABLE C-1
Barrier Heights and Corresponding Noise Levels
(WESTBOUND 580)

Wall No.	Receiver No.	No Wall		With Wall									
		Existing	Future	dBA-Leq (h)									
				H=3.0m (10')	H=3.4m (11')	H=3.7m (12')	H=4.0 (13')	H=4.3m (14')	H=4.6m (15')	H=4.9m (16')			
6 (R/W)	156	74	82	70	69	68	68	67	66	66			
	157	74	81	75	74	73	71	70	70	69			
	158	76	81	78	77	76	74	73	72	71			
	159	76	81	79	78	76	75	74	73	72			
	161	76	81	78	78	77	76	75	73	71			
	162	77	81	78	77	76	75	74	72	69			
	163	77	81	75	73	72	71	70	69	68			
	165	78	81	72	71	70	69	69	68	68			
5 (R/W)	167	78	81	74	72	71	70	70	69	69			
	168	79	82	73	72	71	70	69	69	68			
	1	79	81	72	71	70	70	68	68	68			
	3	79	80	70	70	69	69	68	68	67			
	4	78	80	71	70	69	68	67	67	67			
	5	76	79	70	69	68	67	67	66	66			
	7	75	78	69	69	68	67	67	66	66			
	7A	74	78	69	69	68	67	67	66	66			
	8	74	77	69	68	67	67	66	66	65			
	9	75	76	68	67	67	66	66	66	65			
	10	75	77	68	68	67	67	66	66	65			
	11	75	77	68	68	67	67	66	66	65			
3 (ES)	13	76	80	70	69	68	68	67	66	66			
	14	74	75	68	67	67	67	66	66	65			
	15	74	76	68	68	67	67	66	66	66			
	17	72	77	68	68	67	67	66	66	66			
	18	72	78	68	68	67	67	66	66	66			
	19	79	79	68	68	67	67	66	66	65			
	21	71	80	70	69	68	68	67	67	66			
	22	71	79	67	67	66	66	66	65	65			
	24	71	80	67	67	66	66	66	65	65			
	27	71	80	67	67	66	66	66	65	65			
	29	71	80	67	67	66	66	66	66	65			
	31	71	79	67	67	67	66	66	66	65			
	32	71	77	67	67	67	66	66	66	65			
	33	71	76	67	67	66	66	66	66	65			
	34	76	76	67	67	66	66	66	66	66			
	36	71	75	69	69	68	68	68	68	68			
	37	72	75	68	68	68	68	68	68	67			
	39	72	76	73	73	72	72	72	72	72			
	40	72	73	71	71	71	71	71	71	71			

NOTE: R/W ES Right of way Edge of Shoulder Actual noise reading (adjusted for peak level) - SEE TABLE C Recommended Wall Height

TABLE C-2
Barrier Heights and
Corresponding Noise Attenuations
(WESTBOUND 580)

Wall No.	Receiver No.	No Wall		With Wall									
		Existing	Future	H=3.0m (10')	H=3.4m (11')	H=3.7m (12')	H=4.0 (13')	H=4.3m (14')	H=4.6m (15')	H=4.9m (16')	dBA-Leq (h)		
	170	60				** Not eligible **							
	171	60				** Not eligible **							
	172	60				** Not eligible **							
	173	60				** Not eligible **							
	174	60				** Not eligible **							
	175	60				** Not eligible **							
	176	61				** Not eligible **							
	177	61				** Not eligible **							
	178	61				** Not eligible **							
	180	61				** Not eligible **							
	181	62				** Not eligible **							
	182	62				** Not eligible **							
	184	62				** Not eligible **							
	185	63				** Not eligible **							
	186	63				** Not eligible **							
	187	63				** Not eligible **							
	136	63				** Not eligible **							
9 (R/W)	190	82	82	14	14	15	15	16	15	16	15	16	16
	191	71	79	10	11	11	11	12	11	11	11	12	12
	192	73	80	10	10	11	11	11	11	11	11	12	12
	193	75	79	8	8	8	9	9	9	9	9	9	9
	194	77	82	9	9	9	9	9	9	9	9	9	9
	148	70	72	3	3	3	4	4	4	4	4	4	4
	150	70	73	4	5	5	5	5	5	5	5	5	5
	151	71	73	5	6	6	6	6	6	6	6	6	6
	152	77	79	11	11	12	13	13	14	14	14	14	14
	153	79	82	13	14	15	15	16	17	17	17	17	17
4 (R/W)	154	80	82	14	14	15	16	16	17	17	17	17	17

TABLE C-2
Barrier Heights and
Corresponding Noise Attenuations
(WESTBOUND 580)

Wall No.	Receiver No.	No Wall		With Wall									
		Existing	Future	H=3.0m (10')	H=3.4m (11')	H=3.7m (12')	H=4.0 (13')	H=4.3m (14')	H=4.6m (15')	H=4.9m (16')	dBA-Leq (h)		
6 (R/W)	156	79	82	12	13	14	14	15	16	16			
	157	79	81	6	8	9	10	11	12	13			
	158	79	81	3	4	6	7	8	9	10			
	159	79	81	3	3	5	6	7	8	9			
	161	78	81	2	3	4	5	6	7	8			
	162	78	81	3	4	5	6	7	8	9			
	163	78	81	6	7	8	10	11	11	12			
	165	79	81	9	10	11	12	12	13	14			
	167	79	81	8	9	10	11	12	13	13			
	168	79	82	9	10	11	12	12	13	14			
5 (R/W)	1	78	81	9	10	11	11	13	13	13			
	3	78	80	10	11	11	12	12	13	13			
	4	78	80	10	10	11	12	12	13	13			
	5	77	79	9	10	10	11	11	12	12			
	7	76	78	9	9	10	11	11	12	12			
	7A	76	78	9	10	10	11	11	12	12			
	8	75	77	9	10	10	11	11	12	12			
	9	74	76	9	9	10	10	11	11	12			
	10	75	77	9	9	10	10	11	11	11			
	11	75	77	9	9	10	10	11	11	11			
3 (ES)	13	78	80	11	12	12	13	13	14	14			
	14	73	75	7	8	8	9	9	10	10			
	15	74	76	8	8	9	9	10	10	11			
	17	75	77	9	9	10	10	11	11	11			
	18	75	78	10	10	11	11	12	12	12			
	19	77	79	11	11	11	12	13	13	13			
	21	77	80	10	11	11	12	13	13	14			
	22	77	79	12	12	13	13	14	14	14			
	24	77	80	13	13	14	14	14	15	15			
	27	77	80	13	13	14	14	14	14	15			
	29	77	80	13	13	13	14	14	14	15			
	31	76	79	11	12	12	12	13	13	13			
	32	74	77	10	10	10	11	11	11	11			
	33	73	76	9	9	9	10	10	10	10			
	34	73	76	10	10	10	10	10	11	11			
	36	71	75	6	6	6	6	6	7	7			
	37	72	75	7	7	7	7	7	7	8			
	39	73	76	3	3	3	3	3	3	3			
	40	70	73	2	2	2	2	2	3	3			

NOTE:

Right of way
Edge of Shoulder



Actual noise reading (adjusted for peak level) - SEE TABLE C
 Recommended Wall Height

R/W
ES

TABLE D-1
Barrier Heights and
Corresponding Noise Levels
(EASTBOUND 580)

Wall No.	Receiver No.	No Wall		With Wall						
		Existing	Future	H=3.0m (10')	H=3.4m (11')	H=3.7m (12')	H=4.0 (13')	H=4.3m (14')	H=4.6m (15')	H=4.9m (16')
	42	70				** Commercial Area **				
	43	70				** Commercial Area **				
	44	70				** Commercial Area **				
	45	70				** Commercial Area **				
	46	71				** Commercial Area **				
	47	71				** Commercial Area **				
	49	71				** Commercial Area **				
	51	71				** Commercial Area **				
	52	71				** Commercial Area **				
	53	71				** Commercial Area **				
	55	71				** Commercial Area **				
10	61	77	83	70	70	70	70	70	70	70
(ES)	62	77	82	71	71	70	70	70	70	70
	65	76	78	69	69	68	68	67	67	67
	68	76	78	69	69	68	68	67	67	66
	70	75	79	69	69	67	67	66	66	65
	71	75	80	69	69	67	67	66	66	65
	72	75	80	69	69	67	67	66	66	65
	73	75	80	68	68	67	67	66	66	65
	75	75	81	68	68	67	67	66	66	65
	76	75	81	68	68	67	67	66	66	65
	77	74	81	67	67	66	66	65	65	64
	79	74	81	67	67	66	66	65	65	64
	80	74	81	67	67	66	66	65	65	64
	82	73	81	67	67	65	65	65	65	64
	83	73	82	67	67	66	66	65	65	64
	85	73	82	66	66	65	65	65	65	64
	86	72	82	66	66	65	65	64	64	63
	87	72	81	66	66	65	65	64	64	63
	88	71	81	66	66	65	65	64	64	63
	89	71	80	66	66	65	65	64	64	63
	91	70	80	66	66	65	65	64	64	63
	92	69	79	65	65	64	64	63	63	62
	93	67	78	65	65	64	64	63	63	62
	94	65	77	65	65	64	64	63	63	62
	95	63	76	64	64	63	63	62	62	62

TABLE D-1
Barrier Heights and
Corresponding Noise Levels
(EASTBOUND 580)

Wall No.	Receiver No.	No Wall		With Wall									
				dBA-Leq (h)									
		Existing	Future	H=3.0m (10')	H=3.4m (11')	H=3.7m (12')	H=4.0 (13')	H=4.3m (14')	H=4.6m (15')	H=4.9m (16')			
2 R/W)	97	70	75	68	68	67	67	66	66	65			
	98	71	79	70	70	69	69	68	68	67			
	99	72	81	71	71	69	69	68	68	67			
	100	73	81	71	71	69	69	68	68	67			
	101	74	82	69	69	67	67	67	67	65			
	104	75	82	69	69	67	67	66	66	65			
	107	76	82	69	69	68	68	66	66	66			
	108	77	83	68	68	67	67	66	66	65			
	110	78	82	69	69	68	68	66	66	66			
	111	78	82	69	69	68	68	67	67	66			
1 (ES)	113	78	82	69	69	68	68	67	67	66			
	115	78	82	69	68	68	67	67	66	66			
	117	78	82	69	68	68	67	67	66	66			
	118	78	82	68	68	67	67	66	66	65			
	119	77	80	67	67	66	66	65	65	64			
	121	76	80	67	67	66	66	65	65	64			
	122	75	81	68	67	67	66	66	65	65			
	123	74	80	67	67	66	66	65	65	65			
	125	73	78	66	66	65	65	65	64	64			
	127	72	79	67	66	66	65	65	65	64			
7 (ES)	128	72	81	67	67	67	66	66	66	65			
	130	72	79	67	66	66	65	65	65	64			
	132	71	80	69	68	68	68	68	68	67			
	133	71	81	70	70	70	70	70	70	70			
	134	70	81	72	72	71	71	71	71	71			

NOTE: R/W ES Right of way Actual noise reading (adjusted for peak level) - SEE TABLE C
Edge of Shoulder Recommended Wall Height

TABLE D-2
Barrier Heights and
Corresponding Attenuations
(EASTBOUND 580)

Wall No.	Receiver No.	No Wall		With Wall									
		Existing	Future	dBA-Leq (h)									
				H=3.0m (10')	H=3.4m (11')	H=3.7m (12')	H=4.0 (13')	H=4.3m (14')	H=4.6m (15')	H=4.9m (16')			
10 (ES)	42	70	0				** Commercial Area **						
	43	70	0				** Commercial Area **						
	44	70	0				** Commercial Area **						
	45	70	0				** Commercial Area **						
	46	71	0				** Commercial Area **						
	47	71	0				** Commercial Area **						
	49	71	0				** Commercial Area **						
	51	71	0				** Commercial Area **						
	52	71	0				** Commercial Area **						
	53	71	0				** Commercial Area **						
	55	71	0				** Commercial Area **						
	62	77	83	13	13	13	13	13	13	13	13	13	13
	61	77	82	11	12	12	12	12	12	12	12	12	12
	65	76	78	9	9	10	10	11	11	11	11	11	11
	68	76	78	9	9	10	11	11	11	11	11	11	11
	70	75	79	10	10	11	11	12	12	12	12	12	12
8 (R/W)	71	75	80	11	11	11	12	12	12	12	12	12	12
	72	75	80	11	11	11	12	12	12	12	12	12	12
	73	75	80	13	13	13	14	14	14	14	14	14	14
	75	75	81	13	13	14	14	14	15	15	15	15	15
	76	75	81	14	14	14	15	15	15	15	15	15	15
	77	74	81	14	14	14	15	15	15	15	15	15	15
	79	74	81	14	14	14	15	15	15	15	15	15	15
	80	74	81	14	14	14	15	15	15	15	15	15	15
	82	73	81	15	15	15	16	16	16	16	16	16	16
	83	73	82	16	16	16	16	17	17	17	17	17	17
	85	73	82	15	16	16	16	17	17	17	17	17	17
	86	72	82	15	15	16	16	17	17	17	17	17	17
	87	72	81	15	15	15	16	16	16	16	16	16	16
	88	71	81	15	15	15	16	16	16	16	16	16	16
	89	71	80	14	14	14	15	15	15	15	15	15	15
	91	70	80	15	14	14	15	15	15	15	15	15	15
	92	69	79	14	14	14	15	15	15	15	15	15	15
	93	67	78	13	13	13	14	14	14	14	14	14	14
	94	65	77	13	12	12	13	13	13	13	13	13	13
	95	63	76	8	12	12	13	13	13	13	13	13	13

TABLE D-2
Barrier Heights and
Corresponding Attenuations
(EASTBOUND 580)

Wall No.	Receiver No.	No Wall		With Wall									
				dBA-Leq (h)									
		Existing	Future	H=3.0m (10')	H=3.4m (11')	H=3.7m (12')	H=4.0 (13')	H=4.3m (14')	H=4.6m (15')	H=4.9m (16')			
2 (R/W)	97	70	75	6	7	8	8	9	9	9			
	98	71	79	9	9	11	11	12	12	12			
	99	72	81	10	10	12	12	13	13	13			
	100	73	81	13	13	12	12	13	13	13			
	101	74	82	13	13	14	14	15	15	15			
	104	75	82	13	13	14	14	15	15	15			
	107	76	82	14	14	15	15	16	16	16			
	108	77	83	14	14	16	16	16	16	16			
	110	76	82	13	13	14	14	16	16	16			
	111	78	82	13	13	14	14	16	16	16			
1 (ES)	113	78	82	13	13	14	14	15	15	15			
	115	78	82	13	14	14	15	15	16	16			
	117	78	82	13	14	14	15	15	16	16			
	118	78	82	13	14	14	15	15	16	16			
	119	77	80	13	13	14	14	15	15	16			
	121	76	80	13	14	14	15	15	16	16			
	122	75	81	13	13	14	15	15	15	16			
	123	74	80	13	13	14	14	15	15	16			
	125	73	78	12	12	13	13	14	14	14			
	127	72	79	12	13	13	14	14	15	15			
	128	72	81	13	14	14	14	15	15	15			
	130	72	79	12	12	13	13	13	14	14			
	132	71	80	12	12	12	13	13	13	13			
	133	71	81	10	11	11	11	11	11	11			
7 (ES)	134	70	81	9	9	9	10	10	10	10			

NOTE:

R/W Right of way
 ES Edge of Shoulder



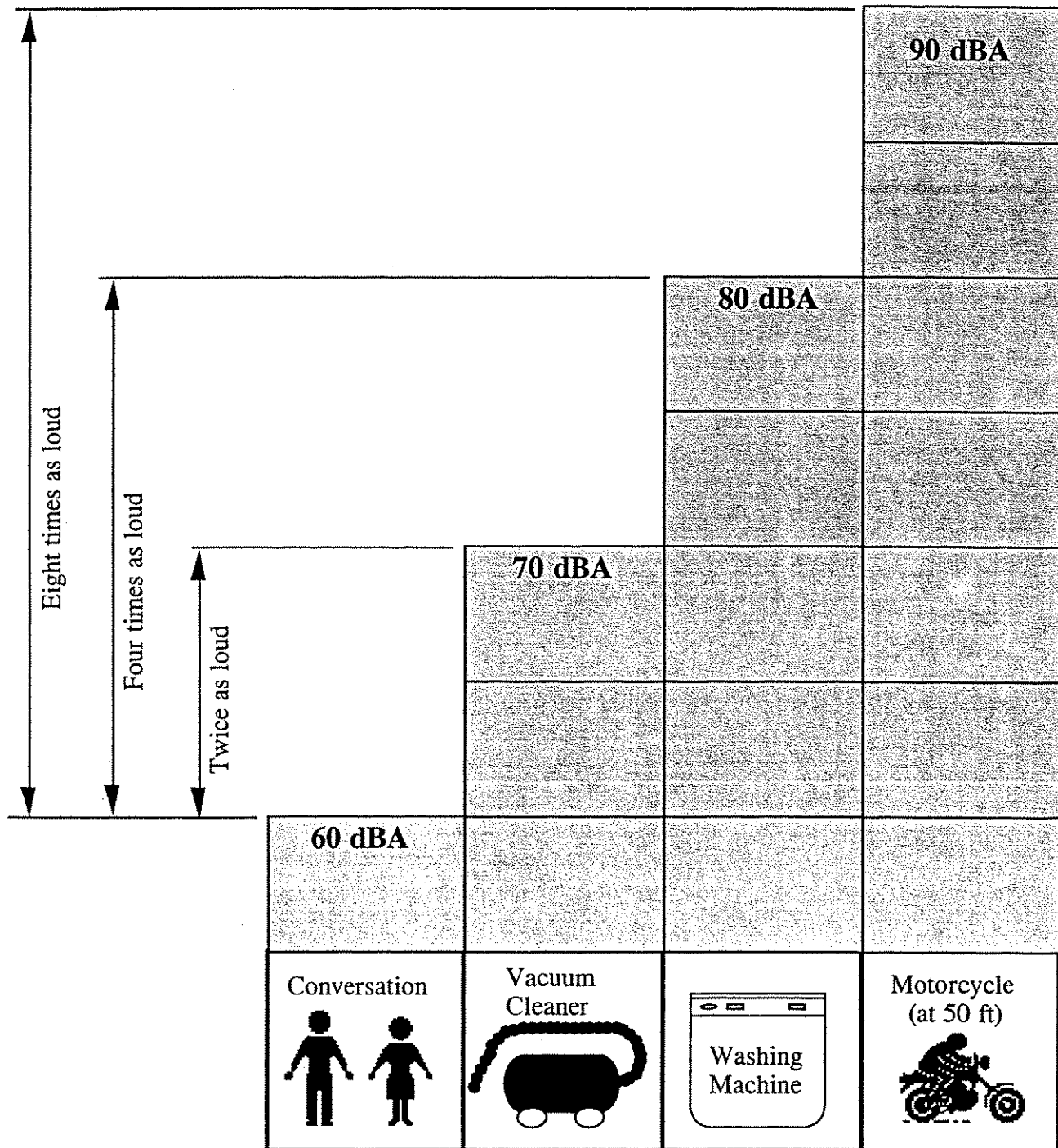
Actual noise reading (adjusted for peak level) - SEE TABLE C
 Recommended Wall Height

EXHIBITS

Common Indoor and Outdoor Noise Levels	xi
Relative Loudness	xii
Noise Abatement Criteria	xiii
A - Noise Barrier Location Map	
B - Noise Impact Study Map	
C - Typical Cross Sections	
D - Proposed Westbound 580 Sound Walls	
D - Proposed Eastbound 580 Sound Walls	
E - Traffic Assumption for TNM Model	
F - Line of Sight Check for Truck Stacks	
G - 24-hr Noise Profile (Westbound)	
G - 24-hr Noise Profile (Eastbound)	
Actual Noise Measurement Data	
Project Cost estimate	

Common Indoor and Outdoor Noise Levels

Outdoor		dBA	Indoor	
22 Caliber Rifle	0.6m	140	Child's Toy Cap Pistol	0.3m
Threshold of Pain		130	Symphony Orchestra (loud passage)	
Pile Driver (Average)	15m	120	Rock Band	
Chain Saw	0.6m	110	Power Hand Saw	1.0m
Emergency Vehicle	8m		Power Hand Sander	1.0m
Jet Flyover	305m		Shop Vacuum Cleaner	1.5m
Street Jackhammer	8m	100	Food Blender	1.0m
Leaf Blower			Rug Shampooer	1.5m
BART Train	1.5m	90	Garbage Disposal	1.0m
Gas Lawn Mower	1.0m		Vacuum Cleaner	1.5m
Diesel Truck	15m	80	Shouting	1.0m
Busy Restaurant			Normal Speech	1.0m
Gas Lawn Mower	15m	70	Large Business Office	
FHWA/Caltrans NAC		60	Dishwasher next Room	
Average Residential Neighborhood (Daytime)		50	Library	
Average Residential Neighborhood (Nighttime)		40	Bedroom at Night	
Soft Whisper	1.0m	30	Concert Hall	
Rustling of Leaves		20	Broadcasting-Recording Studio	
Mosquito	1.0m	10		
Threshold of Hearing		0		

Relative Loudness

Noise Abatement Criteria
Table 1 – 23 CFR Part 772 (FHWA)

Hourly A-Weighted Sound Level ⁽¹⁾ (dBA)		
Activity Category	Leq(h)	L10(h)
A	57 (Exterior)	60 (Exterior)
B	67 (Exterior)	70 (Exterior)
C	72 (Exterior)	75 (Exterior)
D	--	--
E	52 (Interior)	55 (Interior)

(1) Either L10(h) or Leq(h) (but not both)
 may be used on a project.

Description of Activities Categories

A Lands of which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.

B Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.

C Developed lands, properties, or activities not included in Categories A or B above.

D Undeveloped lands.

E Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

EXHIBIT A

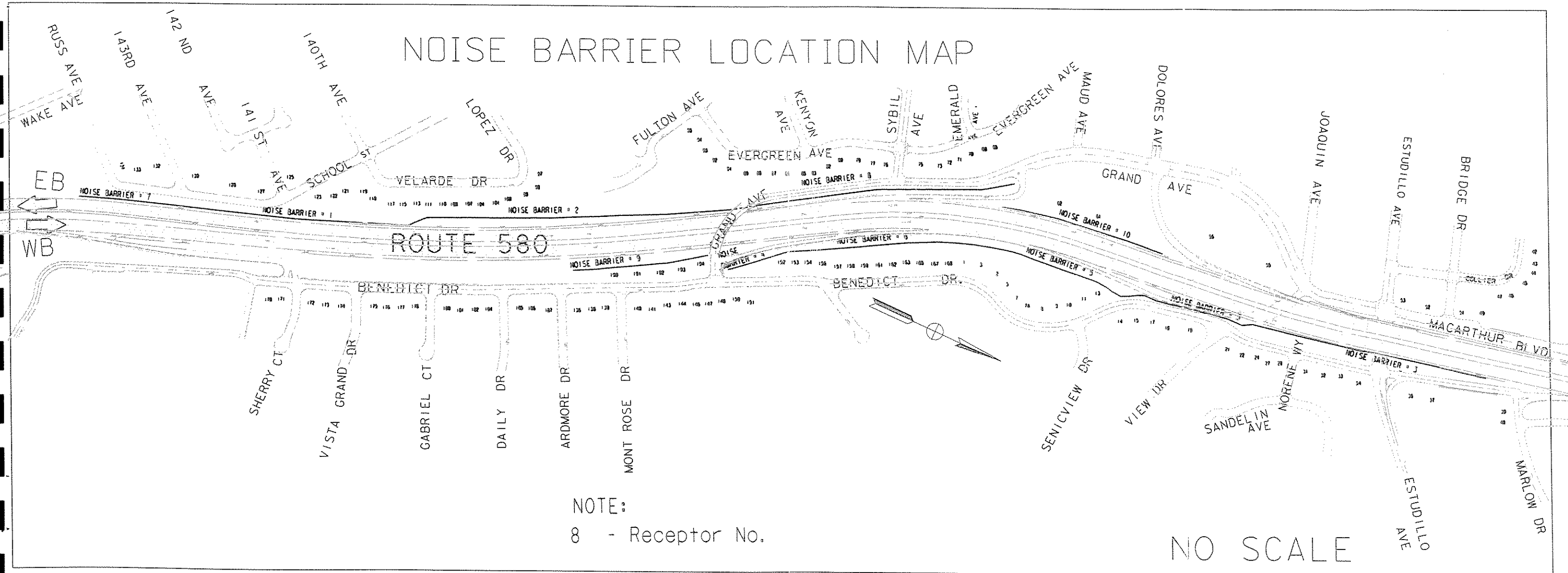
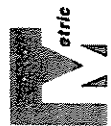
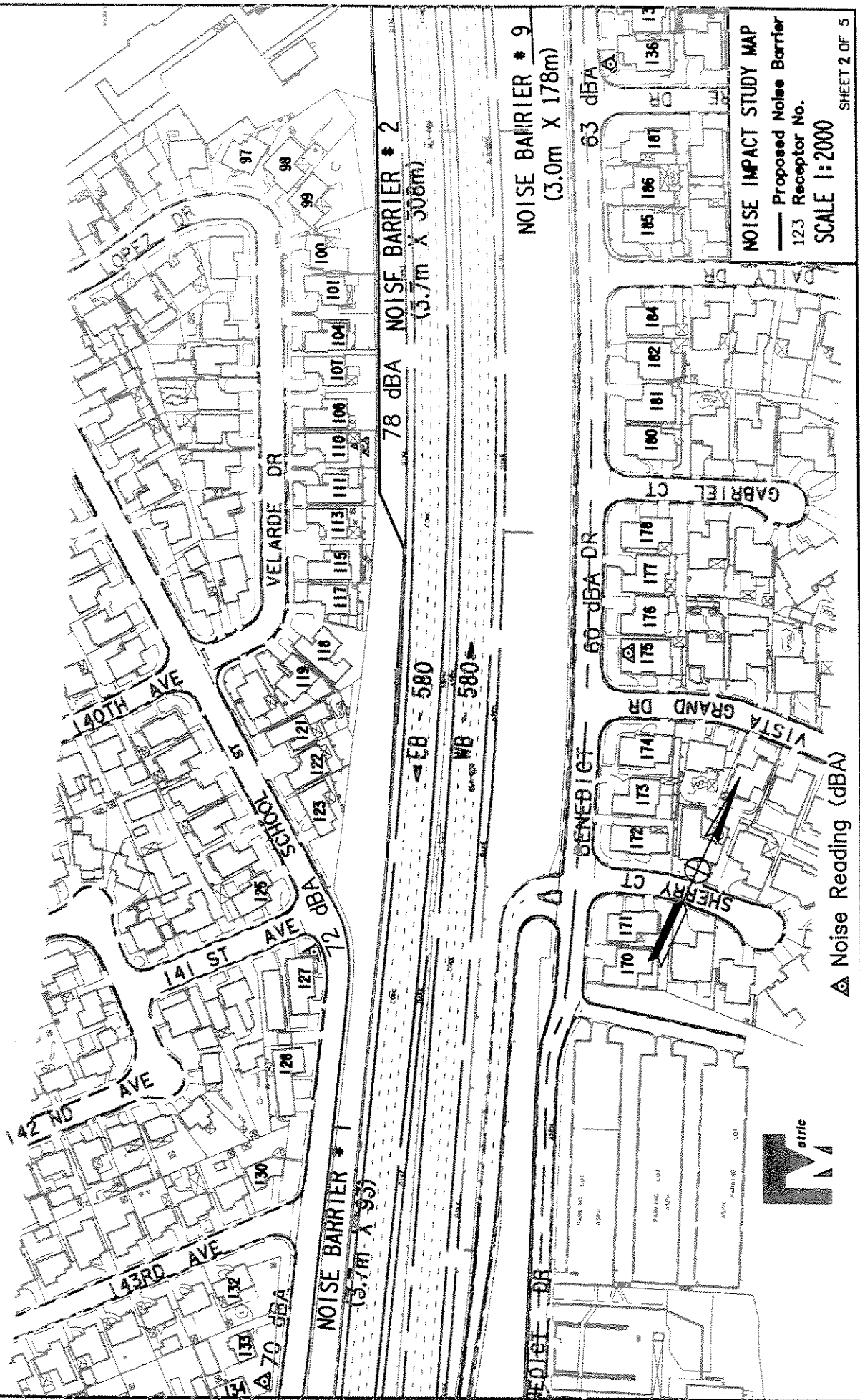


EXHIBIT B



▲ Noise Reading (dBA)

NOISE IMPACT STUDY MAP
 — Proposed Noise Barrier
 123 Receptor No.
 SCALE 1:2000

EXHIBIT B

NOISE IMPACT STUDY MAP

Proposed Noise Barrier

123 Receptor No.

SCALE 1:2000

SHEET 3 OF 5

NOISE BARRIER # 2
(3.7m X 308m)
63 dBA

NOISE BARRIER # 3
(3.7m X 52m)
70 dBA

NOISE BARRIER # 5
(13.7m X 195m)
79 dBA

NOISE BARRIER # 6
(4.9m X 213m)
79 dBA

NOISE BARRIER # 7
(3.7m X 121m)
70 dBA

CHURCH OF ASSUMPTION

KENYON AVE

EVERGREEN AVE

GRAND AVE

BENEDICT DR

MONT ROSE DR

ARDMORE DR

SYDIE AVE

EMERALD AVE

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

251

252

253

254

255

256

257

258

259

260

261

262

263

264

265

266

267

268

269

270

271

272

273

274

275

276

277

278

279

280

281

282

283

284

285

286

287

288

289

290

291

292

293

294

295

296

297

298

299

300

301

302

303

304

305

306

307

308

309

310

311

312

313

314

315

316

317

318

319

320

321

322

323

324

325

326

327

328

329

330

331

332

333

334

335

336

337

338

339

340

341

342

343

344

345

346

347

348

349

350

351

352

353

354

355

356

357

358

359

360

361

362

363

364

365

366

367

368

369

370

371

372

373

374

375

376

377

378

379

380

381

382

383

384

385

386

387

388

389

390

391

392

393

394

395

396

397

398

399

400

401

402

403

404

405

406

407

408

409

410

411

412

413

414

415

416

417

418

419

420

421

422

423

424

425

426

427

428

429

430

431

432

433

434

435

436

437

438

439

440

441

442

443

444

445

446

447

448

449

450

451

452

453

454

455

456

457

458

459

460

461

462

463

464

465

466

467

468

469

470

471

472

473

474

475

476

477

478

479

480

481

482

483

484

485

486

487

488

489

490

491

492

493

494

495

496

497

498

499

500

501

502

503

504

505

506

507

508

509

510

511

512

513

514

515

516

NOISE IMPACT STUDY MAP
 — Proposed Noise Barrier
 123 Receptor No.
 SCALE 1:2000

▲ Noise Reading (dBA)

SHEET 3 OF 5

EXHIBIT B

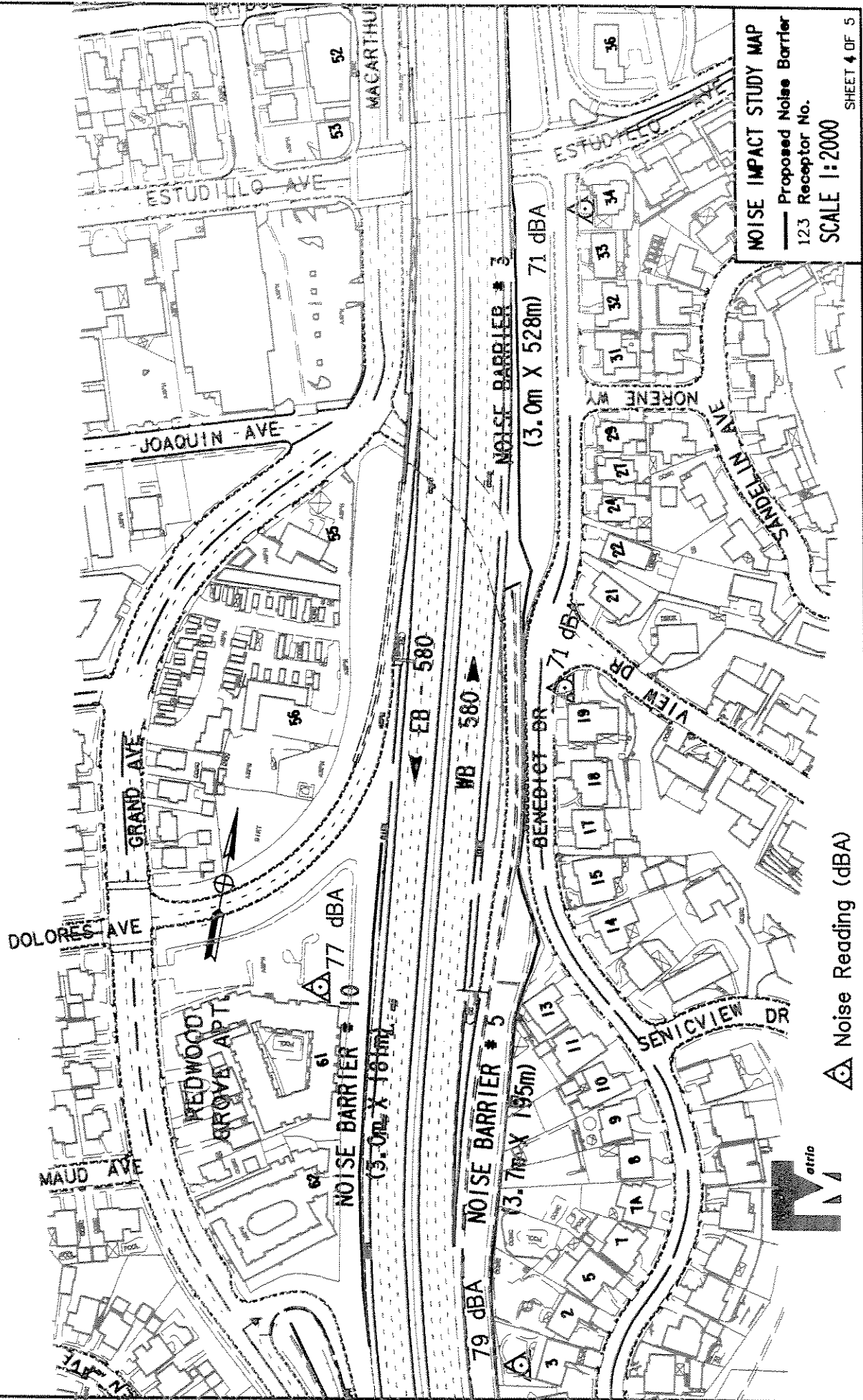
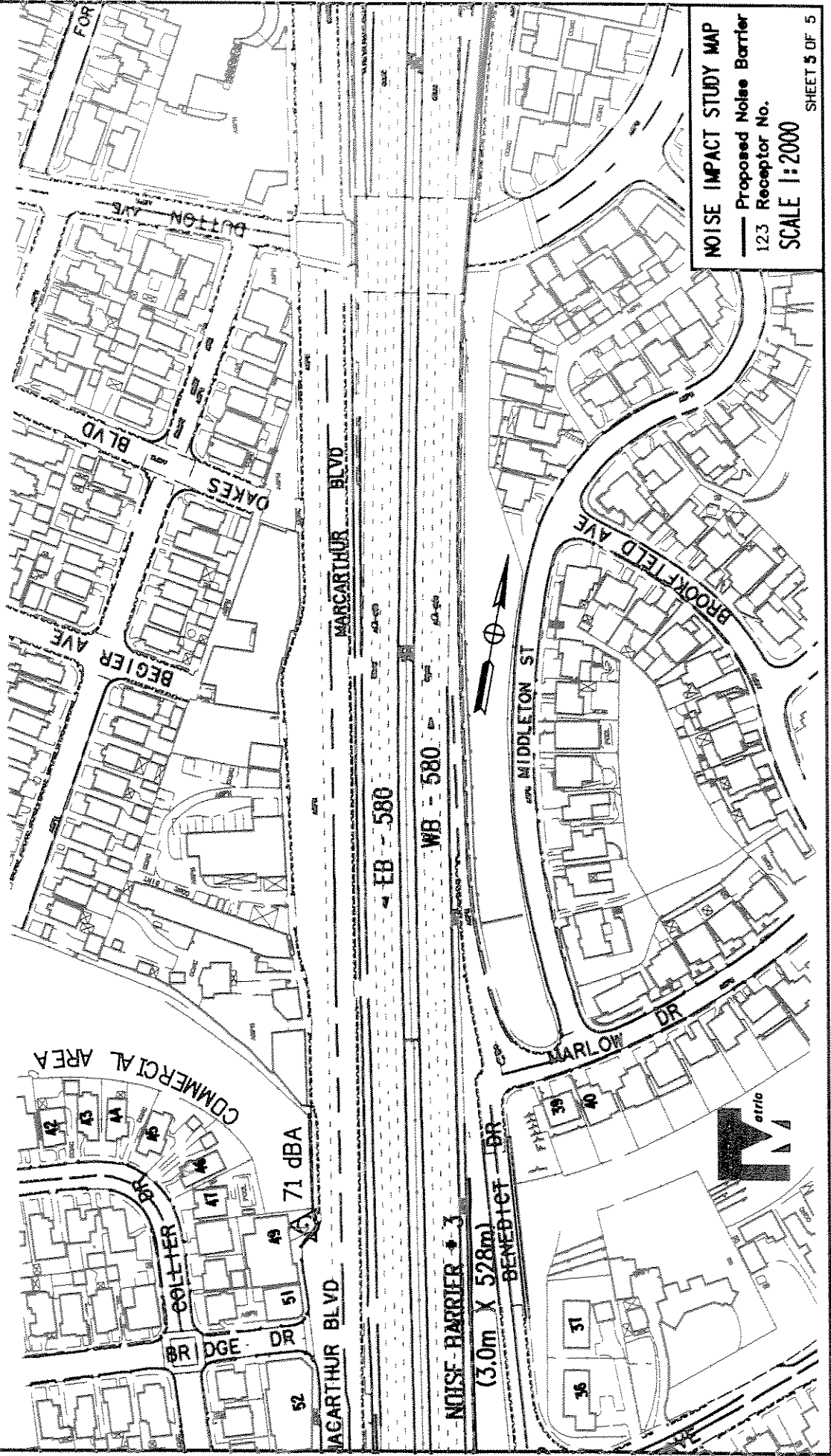
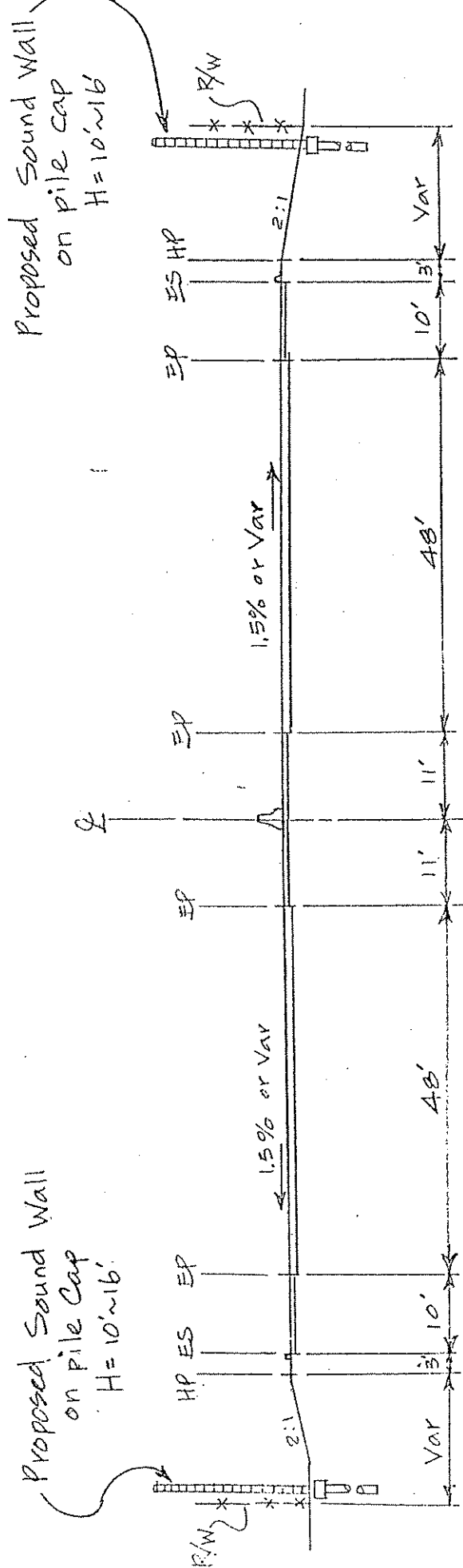


EXHIBIT B

△ Noise Reading (dBA)



NOISE IMPACT STUDY MAP
 — Proposed Noise Barrier
 123 Receptor No.
 SCALE 1:2000



TYPICAL CROSS SECTION

NO SCALE

EA 126200

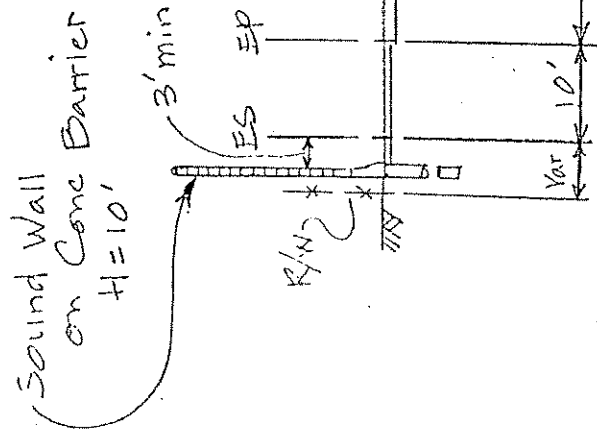
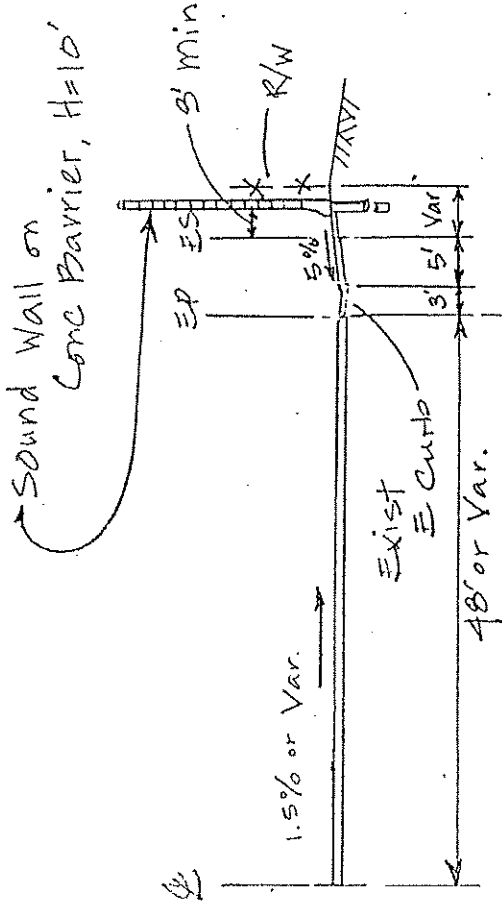
EXHIBIT C

EA 126700
TH

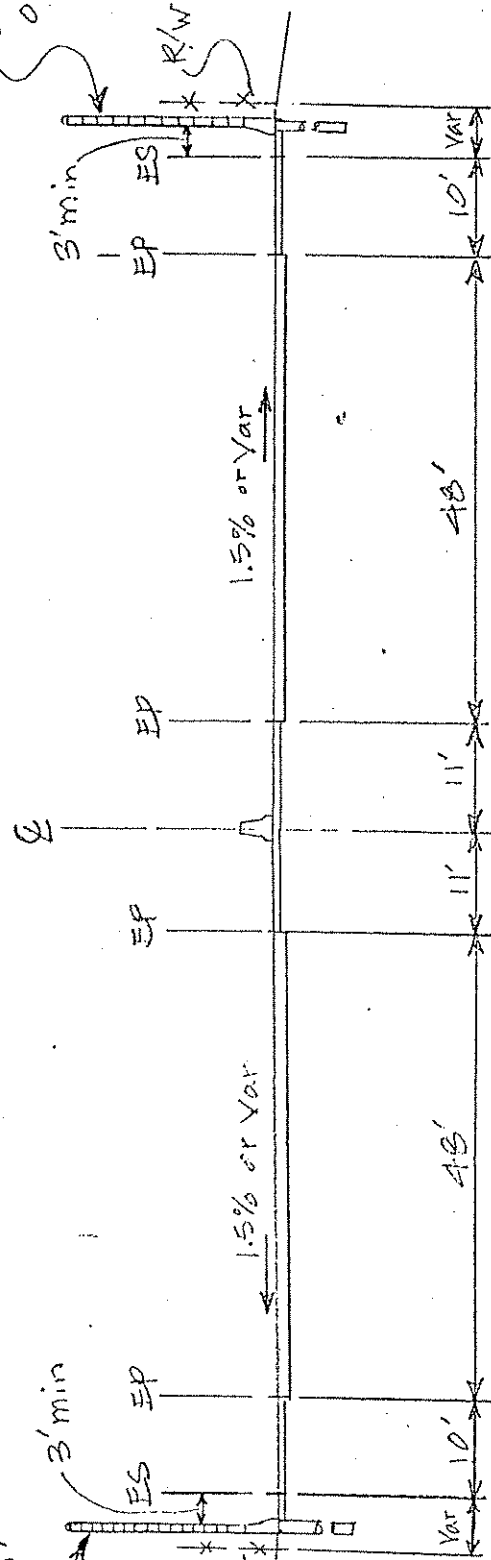
TYPICAL CROSS SECTION

NO SCALE

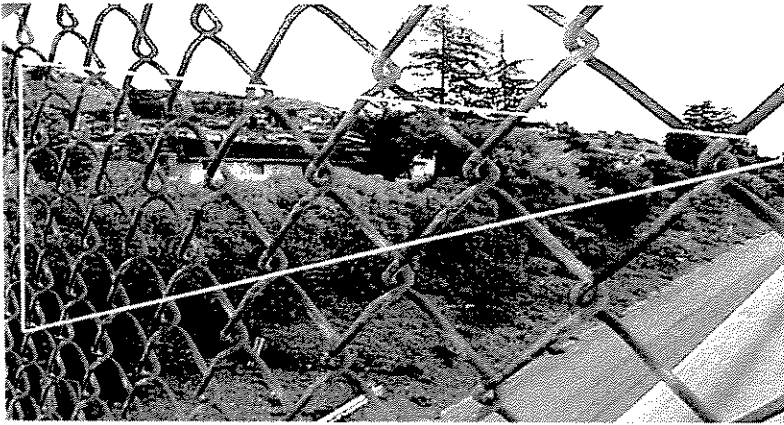
(2)



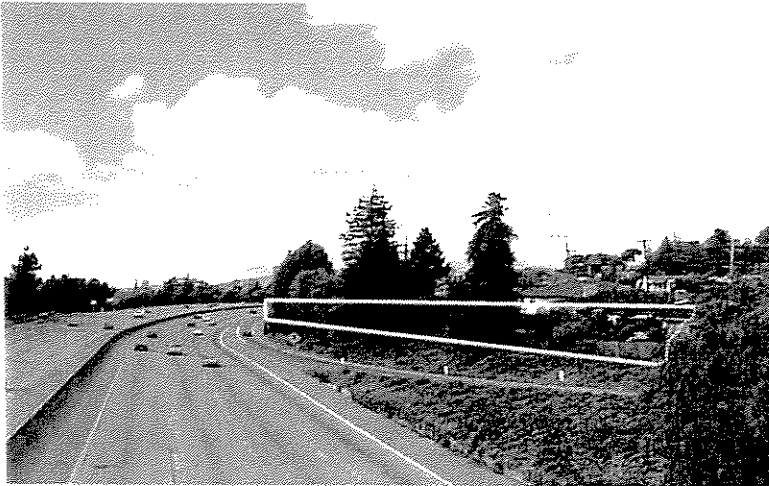
Sound Wall on Conc Barrier H=10'



PROPOSED WESTBOUND 580 SOUND WALLS



Sound Wall # 9



Sound Wall # 4 and 6

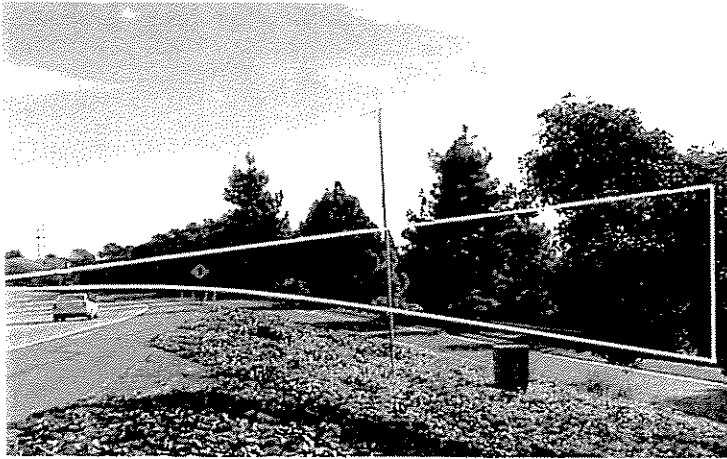


Sound Wall # 5

PROPOSED EASTBOUND 580 SOUND WALLS



Sound Wall # 10

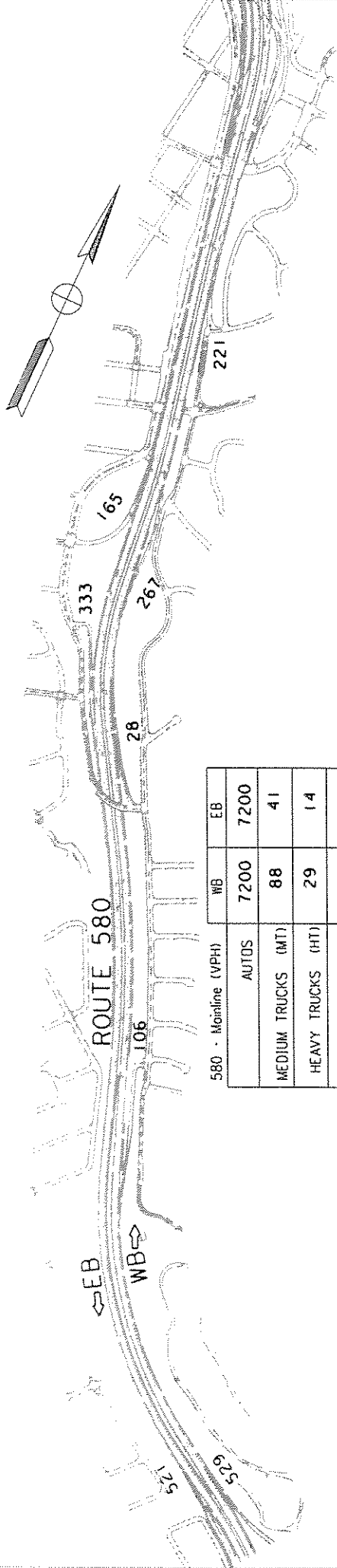


Sound Wall # 8



Sound Wall # 1 and 2

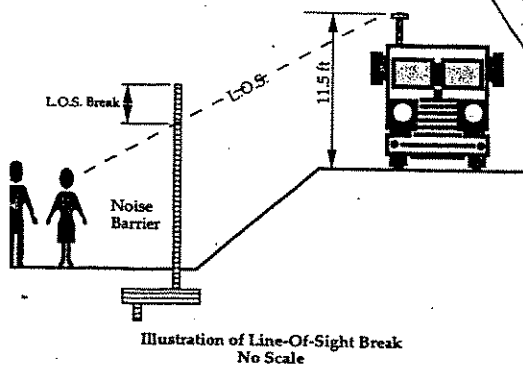
TRAFFIC ASSUMPTION (VPH) FOR TNM MODEL







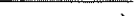


580 - Mainline (VPH)		WB	EB
AUTOS		7200	7200
MEDIUM TRUCKS (MT)		88	41
HEAVY TRUCKS (HT)		29	14
BUSES		2	2
MOTORCYCLES		5	5

NO SCALE

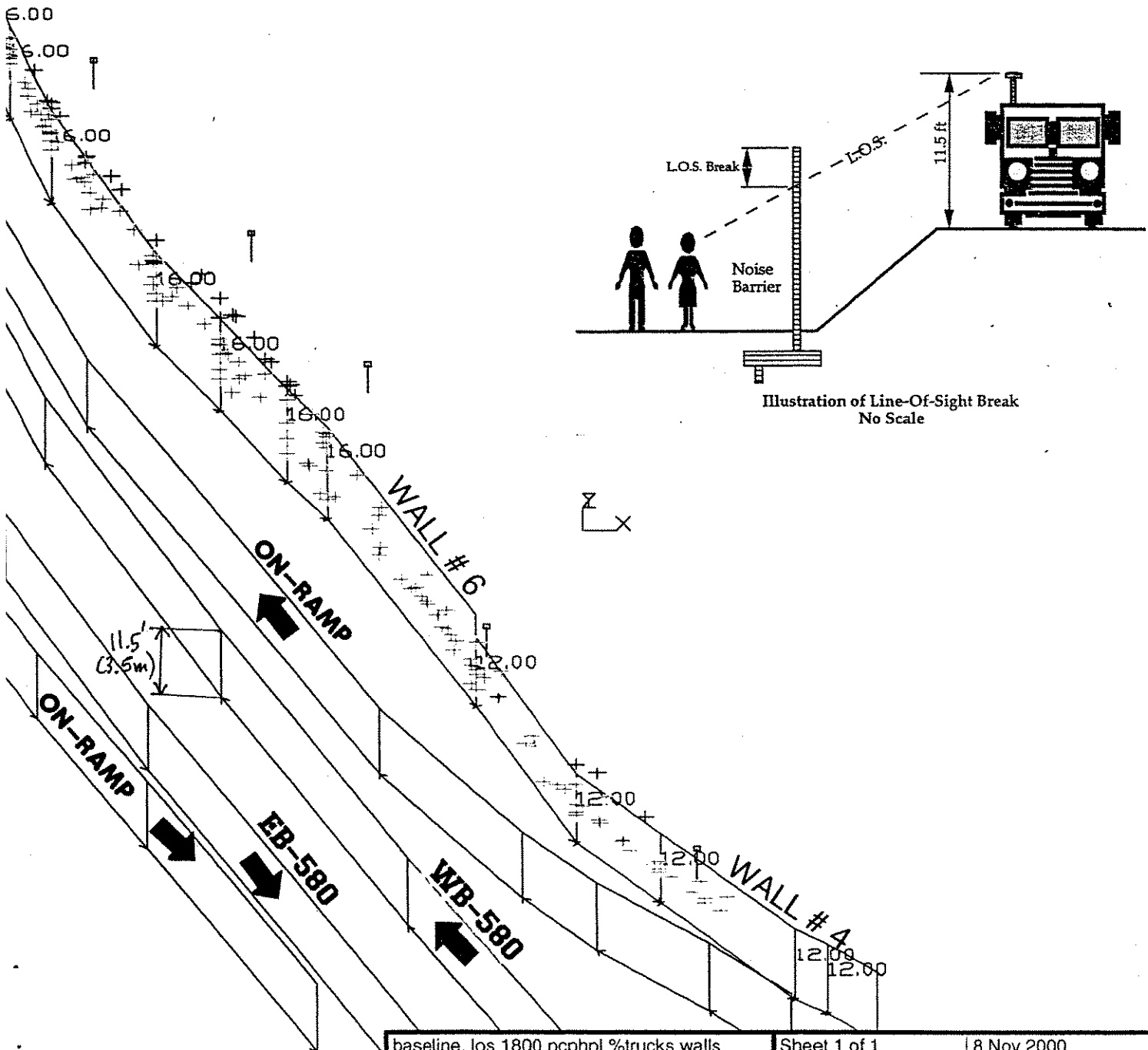
EXHIBIT F



baseline, los 1800 pcphpl,%trucks,walls		Sheet 1 of 1		8 Nov 2000	
Barrier View-unsaved		04-580-PM 33.5/34.6, wb receptors only			
Run name: 580_6		Project/Contract No. In San Leandro: 141St. to Es			
Scale: <DNA - due to perspective>		TNM Version 1.0b, July 1999			
		Analysis By: Andre H. Nguyen			
Roadway:		Ground Zone:	polygon		
Receiver:		Tree Zone:	dashed polygon		
Barrier:		Contour Zone:	polygon		
Building Row:		Parallel Barrier:			
Terrain Line:		Skew Section:			

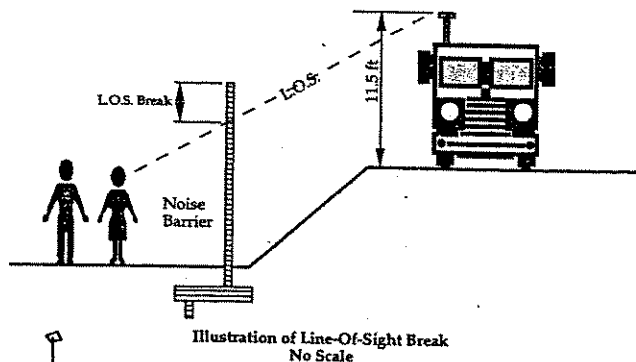
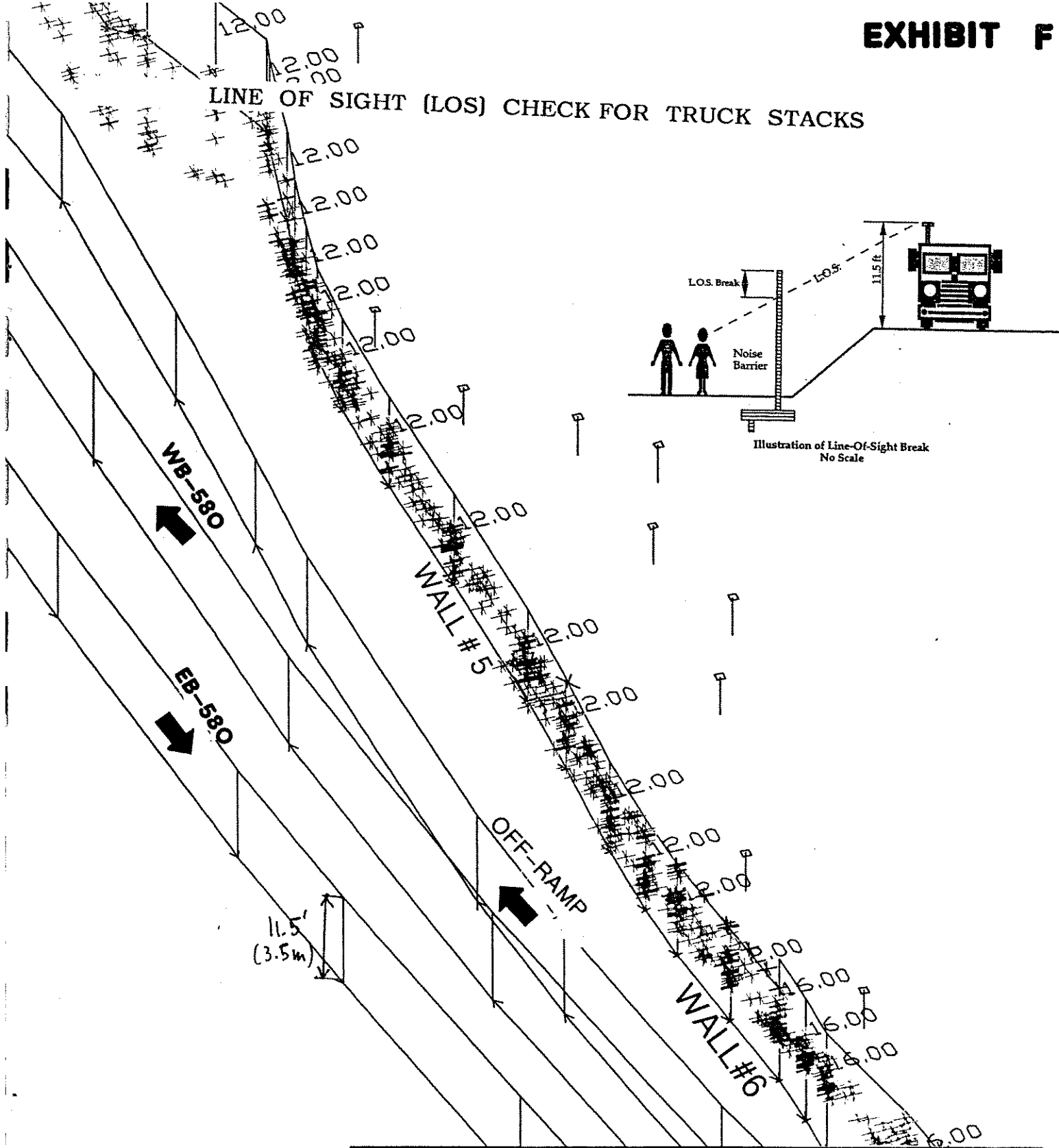
LINE OF SIGHT (LOS) CHECK FOR TRUCK STACKS

b



baseline, los 1800 pcphpl,%trucks,walls		Sheet 1 of 1	8 Nov 2000
Barrier View-unsaved		04-580-PM 33.5/34.6, wb receptors only	
Run name: 580_6		Project/Contract No. In San Leandro: 141St. to Es	
Scale: <DNA - due to perspective>		TNM Version 1.0b, July 1999	
		Analysis By: Andre H. Nguyen	
Roadway:	→	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	→	Contour Zone:	polygon
Building Row:	— —	Parallel Barrier:	— —
Terrain Line:	— —	Skew Section:	— →

LINE OF SIGHT (LOS) CHECK FOR TRUCK STACKS



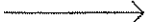



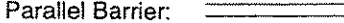


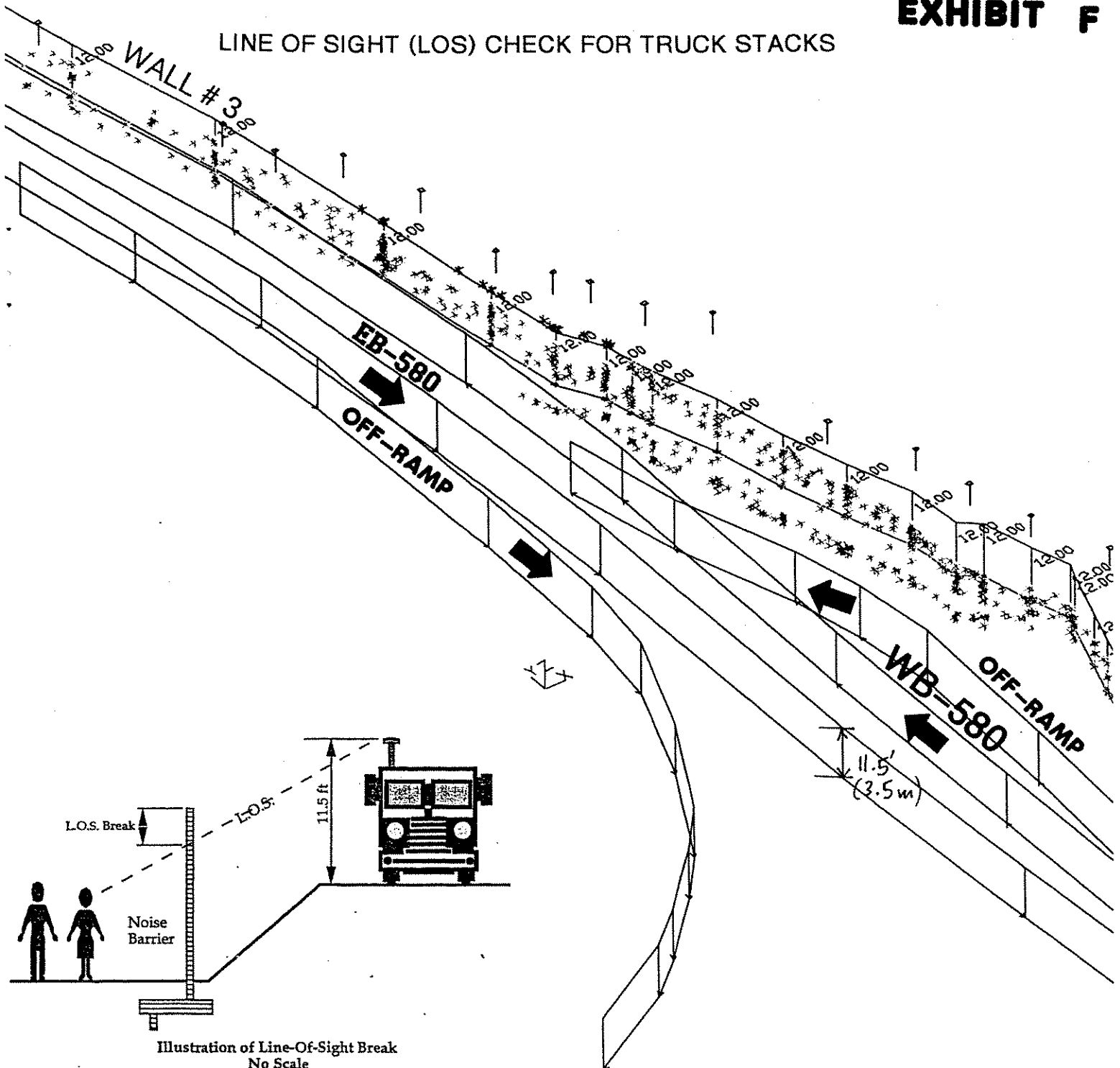
baseline, los 1800 pcphpl,%trucks,walls	Sheet 1 of 1	15 Nov 2000
Barrier View-unsaved	04-580-PM 33.5/34.6, wb receptors only	
Run name: 580_6	Project/Contract No. In San Leandro: 141St. to E:	
Scale: <DNA - due to perspective>	TNM Version 1.0b, July 1999	
	Analysis By: Andre H. Nguyen	
Roadway: 	Ground Zone:	polygon
Receiver: 	Tree Zone:	dashed polygon
Barrier: 	Contour Zone:	polygon
Building Row: 	Parallel Barrier:	
Terrain Line: 	Skew Section:	

EXHIBIT F

LINE OF SIGHT (LOS) CHECK FOR TRUCK STACKS



baseline, los 1800 pcphpl,%trucks,walls

Barrier View-unsaved

Run name: 580_6

Scale: <DNA - due to perspective>

Roadway:

Receiver: 7 (HOME)

Barrier:

Building Row:

Terrain Line:

Sheet 1 of 1

8 Nov 2000

04-580-PM 33.5/34.6, wb receptors only

Project/Contract No. In San Leandro: 141St. to E

TNM Version 1.0b, July 1999

Analysis By: Andre H. Nguyen

Ground Zone: polygon

Tree Zone: dashed polygon

Contour Zone: polygon

Parallel Barrier: ————

Skew Section: ————>

EXHIBIT F

LINE OF SIGHT (LOS) CHECK FOR TRUCK STACKS

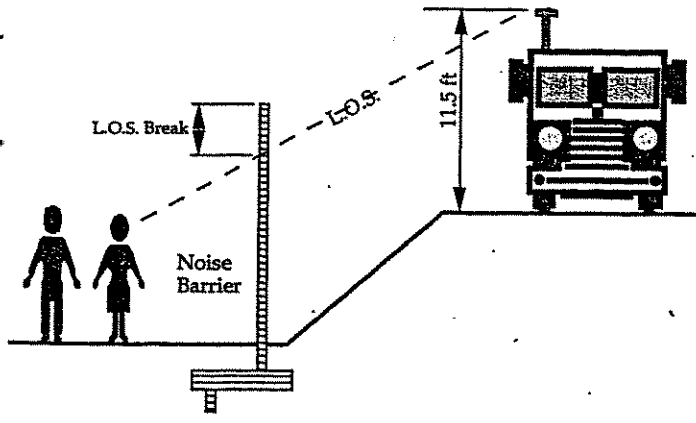
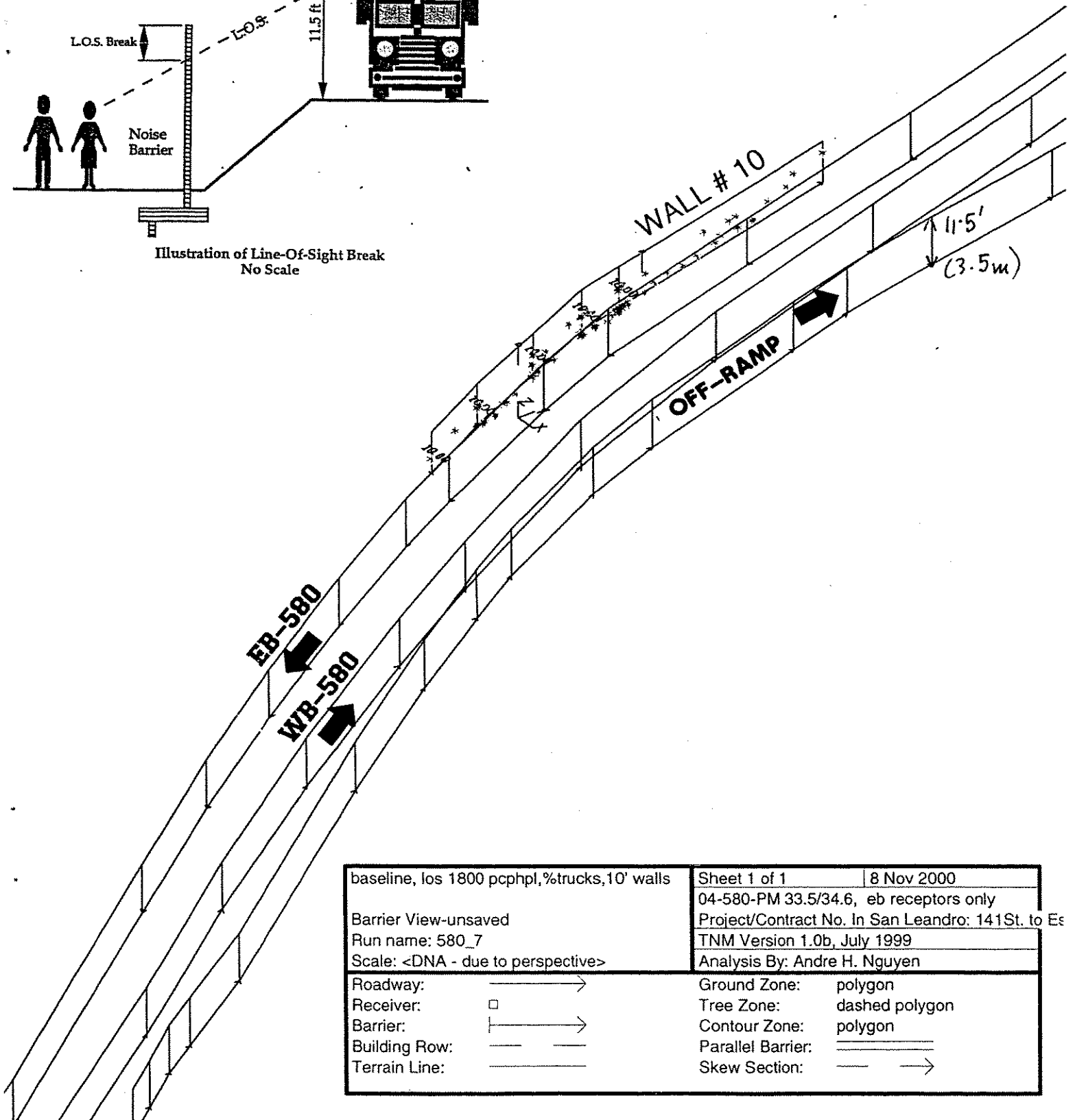
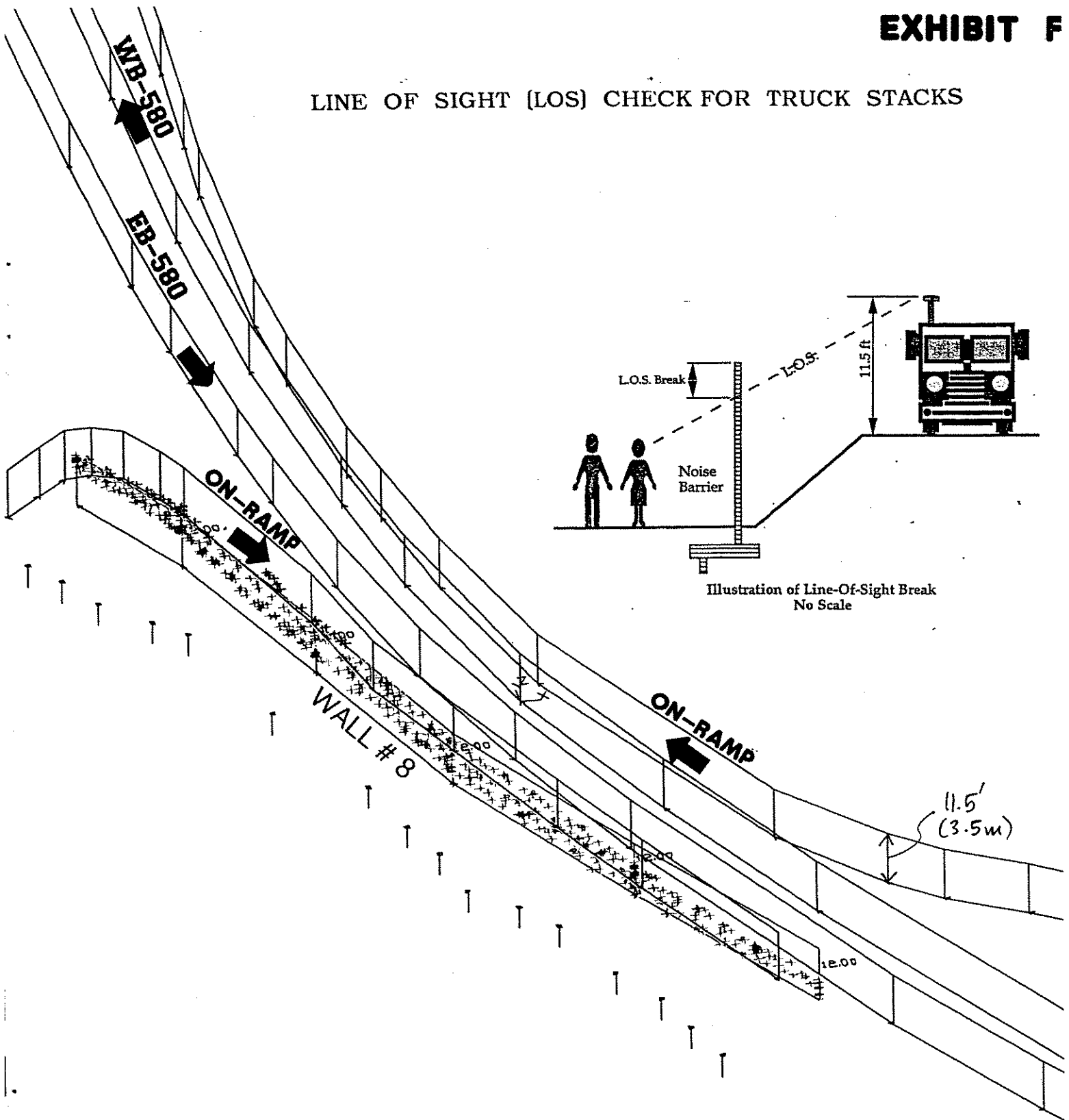


Illustration of Line-Of-Sight Break
No Scale



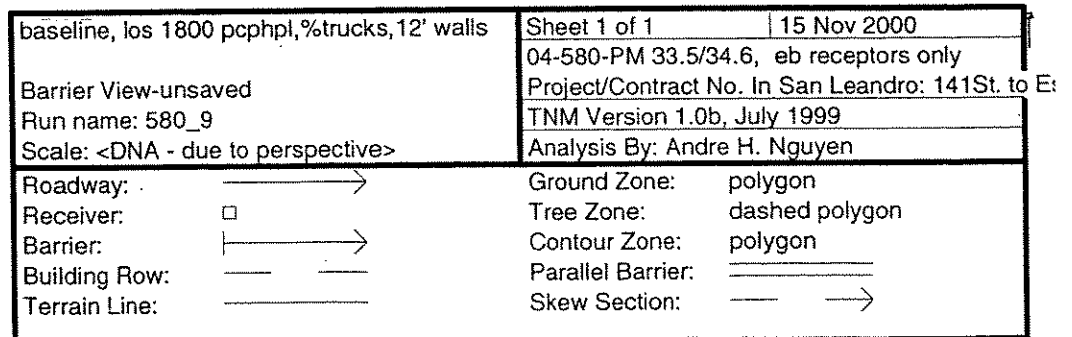
baseline, los 1800 pcphpl,%trucks,10' walls		Sheet 1 of 1	8 Nov 2000
Barrier View-unsaved		04-580-PM 33.5/34.6, eb receptors only	
Run name: 580_7		Project/Contract No. In San Leandro: 141St. to Es	
Scale: <DNA - due to perspective>		TNM Version 1.0b, July 1999	
		Analysis By: Andre H. Nguyen	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	—————>	Contour Zone:	polygon
Building Row:	—————	Parallel Barrier:	—————
Terrain Line:	—————	Skew Section:	—————>

LINE OF SIGHT (LOS) CHECK FOR TRUCK STACKS

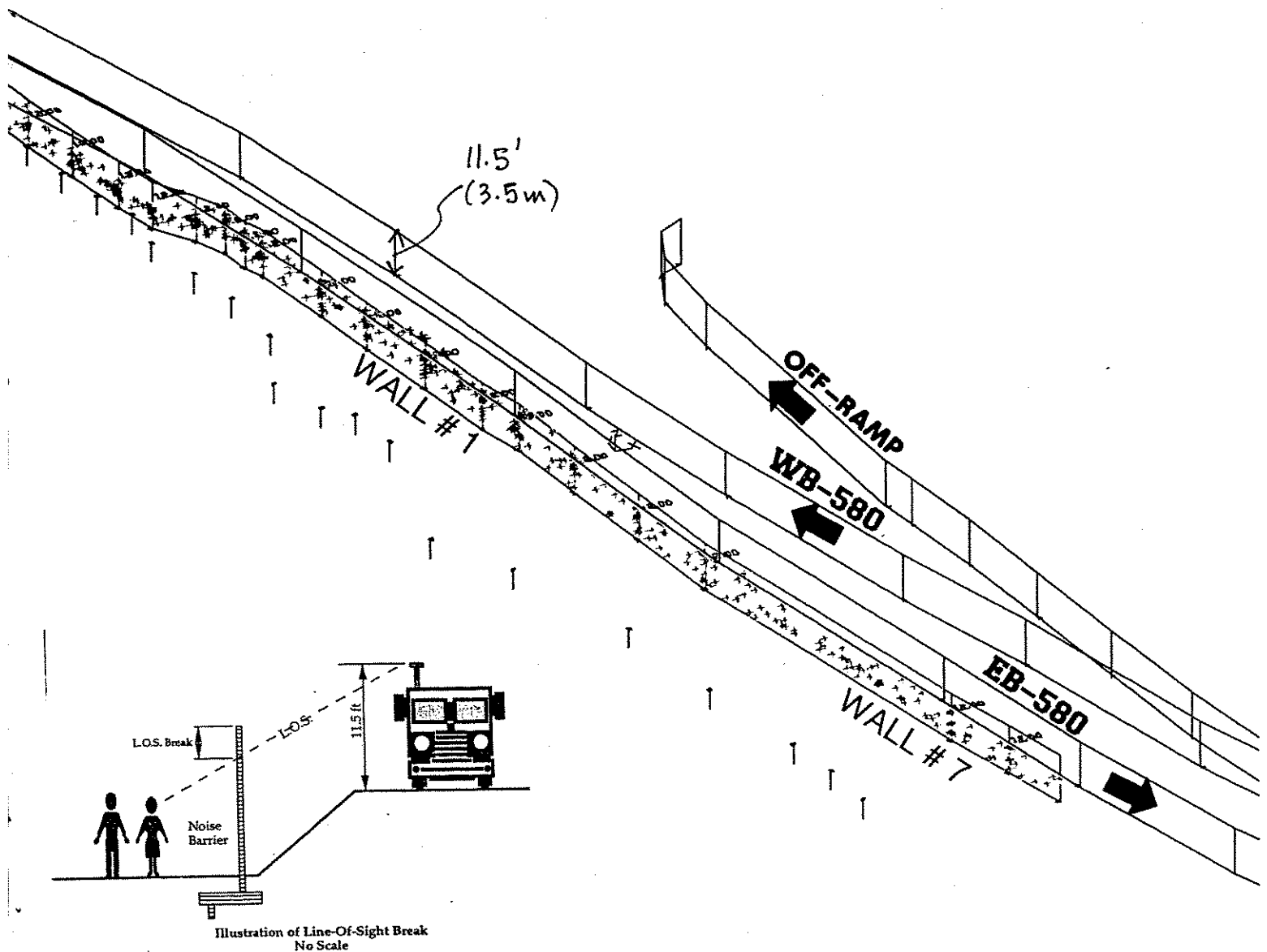


baseline, los 1800 pcphpl,%trucks,12' walls		Sheet 1 of 1	8 Nov 2000
Barrier View-unsaved		04-580-PM 33.5/34.6, eb receptors only	
Run name: 580_9		Project/Contract No. In San Leandro: 141St. to Es	
Scale: <DNA - due to perspective>		TNM Version 1.0b, July 1999	
		Analysis By: Andre H. Nguyen	
Roadway:	→	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	→	Contour Zone:	polygon
Building Row:	— —	Parallel Barrier:	— —
Terrain Line:	— —	Skew Section:	→

LINE OF SIGHT (LOS) CHECK FOR TRUCK STACKS



LINE OF SIGHT (LOS) CHECK FOR TRUCK STACKS



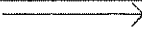






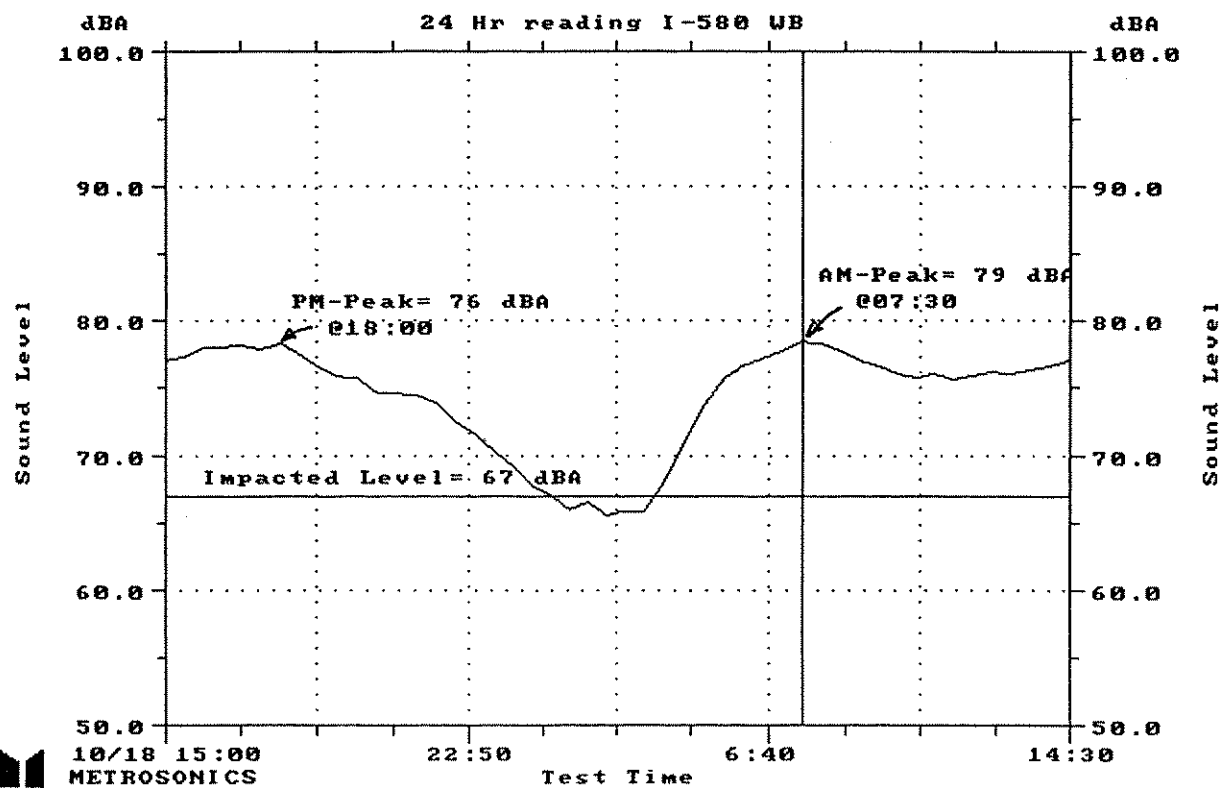
baseline, los 1800 pcphpl,%trucks,12' walls	Sheet 1 of 1	8 Nov 2000
Barrier View-unsaved	04-580-PM 33.5/34.6, eb receptors only	
Run name: 580_9	Project/Contract No. In San Leandro: 141St. to Es	
Scale: <DNA - due to perspective>	TNM Version 1.0b, July 1999	
	Analysis By: Andre H. Nguyen	
Roadway: 	Ground Zone:	polygon
Receiver: 	Tree Zone:	dashed polygon
Barrier: 	Contour Zone:	polygon
Building Row: 	Parallel Barrier:	
Terrain Line: 	Skew Section:	

EXHIBIT G

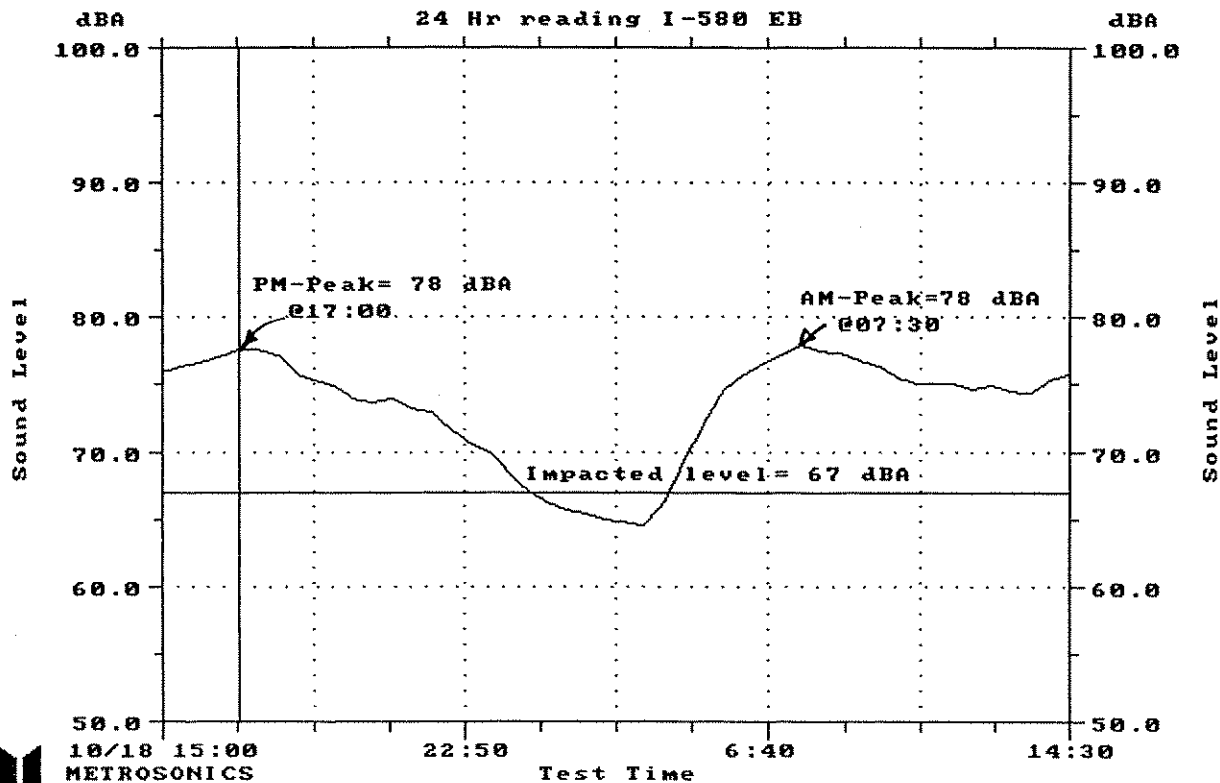
Filename.....310032
Logger.....db-3100 SN 5661
Test Location.....24 Hr reading I-580 WB
Employee Name.....San Leandro (PM33.96)
Employee Number...04-ALA-580 PM 33.5/34.6
Department.....EA 126200
Comment Field 1...Backyard on of house
Comment Field 2...on Benedict Dr. (by AN)
Numeric Code #1... #2... #3... #4... #5...



OVERALL: Lav = 75.6dB
SCAN LINE: 10/19/00 7:30:03 Lav = 78.5dB

EXHIBIT G

Filename.....310033
Logger.....db-3100 SN 2857
Test Location.....24 Hr reading I-580 EB
Employee Name.....San Leandro (PM 33.4)
Employee Number...04-ALA-580 PM 33.5/34.6
Department.....EA 126200
Comment Field 1...Backyard on of house
Comment Field 2...on VeLarde St. (by AN)
Numeric Code #1... #2... #3... #4... #5...



M METROSONICS
Lav
OVERALL: Lav= 74.7dB
SCAN LINE: 10/18/00 17:00:03 Lav= 77.6dB

File Name.....31006
Test Location.....
Employee Name.....
Employee Number...
Department.....
Comment Field 1...
Comment Field 2...
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 5661 V1.7
REPORT PRINTED 10/09/97 AT 10:46:32

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION..... 90dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME....10/08/97 AT 10:37:17
PRE-TEST CALIBRATION RANGE... 39.4dB TO 139.4dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...
Calibrator Calibration Date..

-- OVERALL STATISTICS REPORT --

TEST BEGAN....10/08/97 AT 11:14:24
TEST LENGTH... 0 DAYS 0:17:16
TEST ENDED....10/08/97 AT 11:31:40
TEST INTERRUPTIONS...1

Lav..... 62.2dB
Lav (80)..... 39.4dB Lav (90)..... 39.4dB
SEL..... 92.2dB
TWA..... 47.8dB
TWA (80)..... 39.4dB TWA (90)..... 39.4dB
Lmax..... 71.9dB ON 10/08/97 AT 11:31:39
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

I-580 EB

File Name.....310033
Test Location.....San Leandro (Estudillo)
Employee Name.....04-ALA-580 PM 33.5/34.6
Employee Number...EA 126200
Department.....I-580 EB
Comment Field 1...148th Ave./Wake Ave.
Comment Field 2...
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/05/00 AT 14:41:24

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/04/00 AT 10:51:28
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date..SN # 2321

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/04/00 AT 12:32:10
TEST LENGTH... 0 DAYS 0:15:48
TEST ENDED....12/04/00 AT 12:48:00
TEST INTERRUPTIONS...1

Lav..... 62.4dB
Lav (80)..... 39.1dB Lav (90)..... 39.1dB
SEL..... 92.1dB
TWA..... 47.6dB
TWA (80)..... 39.1dB TWA (90)..... 39.1dB
Lmax..... 69.1dB ON 12/04/00 AT 12:37:43
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....310031
Test Location.....San Leandro (Estudillo)
Employee Name.....04-Ala-580 PM 33.5/34.6
Employee Number...I-580 EB
Department.....EA 126200
Comment Field 1...Receptor # 134
Comment Field 2...Russ/School
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/07/00 AT 17:12:08

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/06/00 AT 18:17:17
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date..SN # 2321

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/07/00 AT 11:59:20
TEST LENGTH... 0 DAYS 0:15:42
TEST ENDED....12/07/00 AT 12:15:02
TEST INTERRUPTIONS...1

Lav..... 67.7dB
Lav (80)..... 48.1dB Lav (90)..... 39.1dB
SEL..... 97.3dB
TWA..... 52.9dB
TWA (80)..... 39.1dB TWA (90)..... 39.1dB
Lmax..... 86.0dB ON 12/07/00 AT 12:00:07
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....31007
Test Location.....
Employee Name.....
Employee Number...
Department.....
Comment Field 1...
Comment Field 2...
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 5661 V1.7
REPORT PRINTED 10/09/97 AT 11:13:25

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME....10/08/97 AT 10:37:17
PRE-TEST CALIBRATION RANGE... 39.4dB TO 139.4dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...
Calibrator Calibration Date..

-- OVERALL STATISTICS REPORT --

TEST BEGAN....10/08/97 AT 11:39:27
TEST LENGTH... 0 DAYS 0:16:16
TEST ENDED....10/08/97 AT 11:55:44
TEST INTERRUPTIONS...1

Lav..... 69.1dB
Lav (80)..... 39.4dB Lav (90)..... 39.4dB
SEL..... 98.9dB
TWA..... 54.5dB
TWA (80)..... 39.4dB TWA (90)..... 39.4dB
Lmax..... 77.0dB ON 10/08/97 AT 11:54:20
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

Receptor # 127 EB

File Name.....310034
Test Location.....San Leandro (Estudillo)
Employee Name.....04-Ala-580 PM 33.5/34.6
Employee Number...EA 126200
Department.....I-580 EB
Comment Field 1...Receptor # 95
Comment Field 2...Fulton/Evergreen
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/07/00 AT 17:17:13

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/06/00 AT 18:17:17
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date..SN # 2321

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/07/00 AT 12:22:43
TEST LENGTH... 0 DAYS 0:16:13
TEST ENDED....12/07/00 AT 12:38:57
TEST INTERRUPTIONS...1

Lav..... 60.9dB
Lav (80)..... 39.1dB Lav (90)..... 39.1dB
SEL..... 90.6dB
TWA..... 46.2dB
TWA (80)..... 39.1dB TWA (90)..... 39.1dB
Lmax..... 68.2dB ON 12/07/00 AT 12:29:20
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....310035
Test Location.....San Leandro (Estudillo)
Employee Name.....04-Ala-580 PM 33.5/34.6
Employee Number...EA 126200
Department.....I-580 EB
Comment Field 1...Receptor # 91
Comment Field 2...(same block Fulton/Everg)
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/07/00 AT 17:20:35

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/06/00 AT 18:17:17
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date..SN # 2321

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/07/00 AT 12:43:47
TEST LENGTH... 0 DAYS 0:16:24
TEST ENDED....12/07/00 AT 13:00:12
TEST INTERRUPTIONS...1

Lav..... 66.9dB
Lav (80)..... 48.0dB Lav (90)..... 39.1dB
SEL..... 96.7dB
TWA..... 52.3dB
TWA (80)..... 39.1dB TWA (90)..... 39.1dB
Lmax..... 83.6dB ON 12/07/00 AT 12:51:34
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....31008
Test Location.....
Employee Name.....
Employee Number...
Department.....
Comment Field 1...
Comment Field 2...
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 5661 V1.7
REPORT PRINTED 10/09/97 AT 10:39:31

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME....10/08/97 AT 10:37:17
PRE-TEST CALIBRATION RANGE... 39.4dB TO 139.4dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...
Calibrator Calibration Date..

-- OVERALL STATISTICS REPORT --

TEST BEGAN....10/08/97 AT 13:28:24
TEST LENGTH... 0 DAYS 0:21:17
TEST ENDED....10/08/97 AT 13:49:42
TEST INTERRUPTIONS...1

Lav..... 71.4dB
Lav (80)..... 64.2dB Lav (90)..... 39.4dB
SEL.....102.3dB
TWA..... 57.9dB
TWA (80)..... 50.7dB TWA (90)..... 39.4dB
Lmax..... 86.4dB ON 10/08/97 AT 13:48:39
Lpk.....113.4dB ON 10/08/97 AT 13:28:57
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.01%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.22%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

Receptor # 75

File Name.....310032
Test Location.....San Leandro (Estudillo)
Employee Name.....04-ALA-580 PM 33.5/34.6
Employee Number...EA 126200
Department.....I-580 EB
Comment Field 1...Receptor # 61
Comment Field 2...Redwood Grove Apt.
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/05/00 AT 14:29:16

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/04/00 AT 10:51:28
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date..SN #2321

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/04/00 AT 12:05:45
TEST LENGTH... 0 DAYS 0:15:45
TEST ENDED....12/04/00 AT 12:21:31
TEST INTERRUPTIONS...1

Lav..... 73.8dB
Lav (80)..... 47.1dB Lav (90)..... 39.1dB
SEL.....103.5dB
TWA..... 59.0dB
TWA (80)..... 39.1dB TWA (90)..... 39.1dB
Lmax..... 80.6dB ON 12/04/00 AT 12:09:30
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....310037
Test Location.....San Leandro (Estudillo)
Employee Name.....04-Ala-580 PM 33.5/34.6
Employee Number...EA 126200
Department.....I-580 EB
Comment Field 1...Receptor # 49
Comment Field 2...Bridge/Collier
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/07/00 AT 17:32:00

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/06/00 AT 18:17:17
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
POST-TEST CALIBRATION TIME...12/07/00 AT 16:35:12
POST-TEST CALIBRATION RANGE.. 39.1dB TO 139.1dB
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date..SN # 2321

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/07/00 AT 13:31:58
TEST LENGTH... 0 DAYS 0:15:44
TEST ENDED....12/07/00 AT 13:47:43
TEST INTERRUPTIONS...1

Lav..... 70.9dB
Lav (80)..... 56.7dB Lav (90)..... 39.1dB
SEL.....100.6dB
TWA..... 56.1dB
TWA (80)..... 41.9dB TWA (90)..... 39.1dB
Lmax..... 85.0dB ON 12/07/00 AT 13:35:16
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....310030
Test Location.....San Leandro (Estudillo)
Employee Name.....04-ALA-580 PM 33.5/34.6
Employee Number...EA 126200
Department.....I-580 WB
Comment Field 1...Receptor #190
Comment Field 2...Montrose Dr./Benedict Dr.
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/05/00 AT 16:28:37

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/04/00 AT 10:51:28
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date..SN #2321

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/04/00 AT 11:43:19
TEST LENGTH... 0 DAYS 0:16:36
TEST ENDED....12/04/00 AT 11:59:56
TEST INTERRUPTIONS...1

Lav..... 67.1dB
Lav (80)..... 58.1dB Lav (90)..... 39.1dB
SEL..... 97.0dB
TWA..... 52.5dB
TWA (80)..... 43.6dB TWA (90)..... 39.1dB
Lmax..... 87.9dB ON 12/04/00 AT 11:50:49
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....31002
Test Location.#5. ALA-580 BENEDICT VISTA BLAND
Employee Name.....
Employee Number...
Department.....
Comment Field 1...
Comment Field 2...
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 5661 V1.7
REPORT PRINTED 10/16/97 AT 07:55:05

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME....10/08/97 AT 10:37:17
PRE-TEST CALIBRATION RANGE... 39.4dB TO 139.4dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...
Calibrator Calibration Date..

-- OVERALL STATISTICS REPORT --

TEST BEGAN....10/15/97 AT 11:29:37
TEST LENGTH... 0 DAYS 0:01:09
TEST ENDED....10/15/97 AT 11:30:47
TEST INTERRUPTIONS...1

Lav..... 59.6dB
Lav (80)..... 39.4dB Lav (90)..... 39.4dB
SEL..... 78.0dB
TWA..... 39.4dB
TWA (80)..... 39.4dB TWA (90)..... 39.4dB
Lmax..... 70.0dB ON 10/15/97 AT 11:30:45
Lpk.....114.0dB ON 10/15/97 AT 11:30:42
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

Receptor # 175

File Name.....310024
Test Location.....San Leandro (Estudillo)
Employee Name.....04-Ala-580 PM 33.5/34.6
Employee Number...EA 126200
Department.....I-580 WB
Comment Field 1...Receptor # 136
Comment Field 2...Admore/Benedict (Front)
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/05/00 AT 13:23:04

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/04/00 AT 10:51:28
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date.._____

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/04/00 AT 11:26:56
TEST LENGTH... 0 DAYS 0:15:29
TEST ENDED....12/04/00 AT 11:42:25
TEST INTERRUPTIONS...1

Lav..... 62.9dB
Lav (80)..... 39.1dB Lav (90)..... 39.1dB
SEL..... 92.4dB
TWA..... 48.0dB
TWA (80)..... 39.1dB TWA (90)..... 39.1dB
Lmax..... 80.5dB ON 12/04/00 AT 11:32:15
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....310036
Test Location.....San Leandro (Estudillo)
Employee Name.....04-Ala-580 PM 33.5/34.6
Employee Number...EA 126200
Department.....I-580 WB
Comment Field 1...Receptor # 34
Comment Field 2...Estudillo/Benedict
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 2857 V1.5
REPORT PRINTED 12/07/00 AT 17:29:16

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...FAST
PRE-TEST CALIBRATION TIME....12/06/00 AT 18:17:17
PRE-TEST CALIBRATION RANGE... 39.1dB TO 139.1dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...Metrosonic CL-304
Calibrator Calibration Date..SN # 2321

-- OVERALL STATISTICS REPORT --

TEST BEGAN....12/07/00 AT 13:08:43
TEST LENGTH... 0 DAYS 0:18:48
TEST ENDED....12/07/00 AT 13:27:33
TEST INTERRUPTIONS...1

Lav..... 69.7dB
Lav (80)..... 53.4dB Lav (90)..... 39.1dB
SEL.....100.2dB
TWA..... 55.7dB
TWA (80)..... 39.4dB TWA (90)..... 39.1dB
Lmax..... 88.1dB ON 12/07/00 AT 13:08:43
Lpk.....UNDER
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

File Name.....31003
Test Location...#7 ALA-520 BENEDICT/NOREEN 2#7
Employee Name.....
Employee Number...
Department.....
Comment Field 1...
Comment Field 2...
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-3100 SN 5661 V1.7
REPORT PRINTED 10/16/97 AT 07:53:54

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME....10/08/97 AT 10:37:17
PRE-TEST CALIBRATION RANGE... 39.4dB TO 139.4dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...
Calibrator Calibration Date..

-- OVERALL STATISTICS REPORT --

TEST BEGAN....10/15/97 AT 11:41:44
TEST LENGTH... 0 DAYS 0:02:24
TEST ENDED....10/15/97 AT 11:44:09
TEST INTERRUPTIONS...1

Lav..... 69.4dB
Lav (80)..... 56.3dB Lav (90)..... 39.4dB
SEL..... 91.0dB
TWA..... 46.5dB
TWA (80)..... 39.4dB TWA (90)..... 39.4dB
Lmax..... 81.5dB ON 10/15/97 AT 11:42:05
Lpk.....117.6dB ON 10/15/97 AT 11:42:05
TIME OVER 115dB.. 0 DAYS 0:00:00.00
8 HR % DOSE (80dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (80dB CUTOFF).. 0.00%
8 HR % DOSE (90dB CUTOFF)..... 0.00%
8 HR PROJ. % DOSE (90dB CUTOFF).. 0.00%

Receptor # 19 WB

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

Type of Estimate NBSSR

Program Code SW-HB311

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

Project Description

Limits In Alameda County in San Leandro on NB Route 580 from Estudillo Avenue to 141 st street


Proposed Improvement To construct noise barriers along both sides of Route 580
(Scope)

Alternative: None

ROADWAY ITEMS	\$	3,268,717
STRUCTURE ITEM	\$	1,200,500
CONSTRUCTION SUBTOTAL	\$	4,469,217
RIGHT OF WAY (Current Value)	\$	86,500
TOTAL PROJECT COST	\$	4,555,717

Approved by
Project Manager

Signature


R. A. ANDERSON

Date 5/24/01

Phone No.

6-6155

PRELIMINARY PROJECT COST ESTIMATE

Type of Estimate NBSSR

DIST-CO-RTE 04-Ala-580

Program Code SW-HB311

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

I. ROADWAY ITEMS

	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>		<u>Unit Cost</u>	<u>Section Cost</u>
Section 1 Earthwork						
Roadway Excavation	60	m3	650	\$	39,000	
Imported Borrow	60	m3	60	\$	3,600	
Structure Exc. (Soundwall)	1,424	m3	20	\$	28,480	
Structure Backfill	1,000	m3	15	\$	15,000	
Clearing & Grubbing	LS	LS	45,000	\$	45,000	

Total Earthwork \$ 131,080

Section 2 Structural Section

Asphalt Concrete (Type A)	500	tonn	80	\$	40,000
Class 3 Aggregate Base	200	m3	100	\$	20,000

Total Structural Items \$ 60,000

Section 3 Drainage

Longitudinal Drainage
Lateral Drainage
Edge Drains
Under Drains
Pumping Plant

Total Drainage 0

PRELIMINARY PROJECT COST ESTIMATE

Type of Estimate NBSSR

Program Code SW-HB311

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Unit Cost</u>	<u>Section Cost</u>
Section 4 Specialty Items					
Soundwall (Barrier)(Msnry Blk)	5,900	m2	115	678,500	
Soundwall (Masonry Block)	3,740	m2	120	448,800	
Concrete Barrier (Type 27SV)	1,294	m	225	291,150	
350 mm CIDH Piling (Barrier)	845	m	120	101,400	
400 mm CIDH Piling (Barrier)	1,775	m	80	142,000	
Remove Metal Beam Guard Rail	420	m	20	8,400	
Remove Chain Link Fence	1,850	m	10	18,500	
Reconstruct Chain Link Fence	800	m	35	28,000	
Remove Concrete Sidewalk	7.3	m3	300	2,190	
Minor Concrete (Misc. Const.)	35	m3	500	17,500	
Temporary Fence	260	m	20	5,200	
Highway Planting	LS	LS	60,000	60,000	
Plant Establishment	LS	LS	30,000	30,000	
Irrigation Modification	LS	LS	40,000	40,000	
Irrigation System	LS	LS	220,000	220,000	
Residence Engineer Office Space	LS	LS	25,000	25,000	
Erosion Control	LS	LS	10,000	10,000	
Total Specialty Items \$					2,126,640
Section 5 Traffic Items					
Electrical Lighting and Sign Illumination	LS	LS	100,000	100,000	
Traffic Control System	LS	LS	30,000	30,000	
Construction Area Signs	LS	LS	5,000	5,000	
Temporary Railing (Type K)	1,350	m	50	67,500	
Temp. Crash Cushion Module	56	EA	250	14,000	
Total Traffic Items \$					216,500
Subtotal Sections 1-5 \$					2,594,220

PRELIMINARY PROJECT COST ESTIMATE

Type of Estimate NBSSR

Program Code SW-HB311

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

Unit Cost Section Cost

Section 6 Minor Items

Subtotal Sections 1-5 2,594,220 x (5%) \$ 129,711

Total Minor Items \$ 129,711

Section 7 Roadway Mobilization

Subtotal Sections 1-5
Minor Items
Sum x (10%)

Total Roadway Mobilization \$ 0

(Not normally required on noise barrier projects. Full compensation is included in the price of various items.)

Section 8 Roadway Additions

Supplemental Work

Subtotal Sections 1-5 2,594,220
Minor Items 129,711
Sum 2,723,931 x (5-10%) \$ 136,197

Contingencies

Subtotal Sections 1-5 2,594,220
Minor Items 129,711
Sum 2,723,931 x (15%) \$ 408,590

Total Roadway Additions \$ 544,786

Total Roadway Items (Total of Sections 1-8) \$ 3,268,717

Estimate Prepared by Vincent Tsin Phone # 510-286-4699 Date 11/20/2000

Estimate Reviewed by Andre Nguyen Phone #510-286-5658 Date 11/20/2000

PRELIMINARY PROJECT COST ESTIMATE

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

II STRUCTURE ITEMS

Bridge Name	San Leandro Creek Br.	Estudillo Ave UC Br.	Wall "M"
Structure Type	Concrete Girder Bridge	Concrete Girder Bridge	Retaining Wall
Width meter (out to out)	21	21	
Span Lengths meter	16.5-32-25.3	44	122
Total Area Sq. meter	1,551	924	
Footing Type (pile/spread)	Pile Footing	Pile Footing	Spread Footing
Cost Per Sq Meter (incl. 10% mobilization and 25% contingency)			
Total Cost for Structure	292,500	175,000	733,000
Demolish Structure Sq meter			

Subtotal Structures Items \$ 1,200,500

Total Structures Items \$ 1,200,500

Estimate Prepared by John Bither

Phone # 916-227-8605 Date 5/24/2001

Estimate Reviewed by Vincent Tsin

Phone # 510-286-4699 Date 5/24/2001

PRELIMINARY PROJECT COST ESTIMATE

DIST-CO-RTE 04-Ala-580

KP 53.9/55.7

PM 33.5/34.6

EA 126200

PP No.

III RIGHT OF WAY

Acquisition, including excess lands
and damages to remainders(s) \$ 85,000

Utility Relocation (State share) \$ 1,500

Clearance/Demolition

RAP

Title and Escrow Fees

Subtotal \$ 86,500

Contingencies

Subtotal

Total Right of Way \$ 86,500

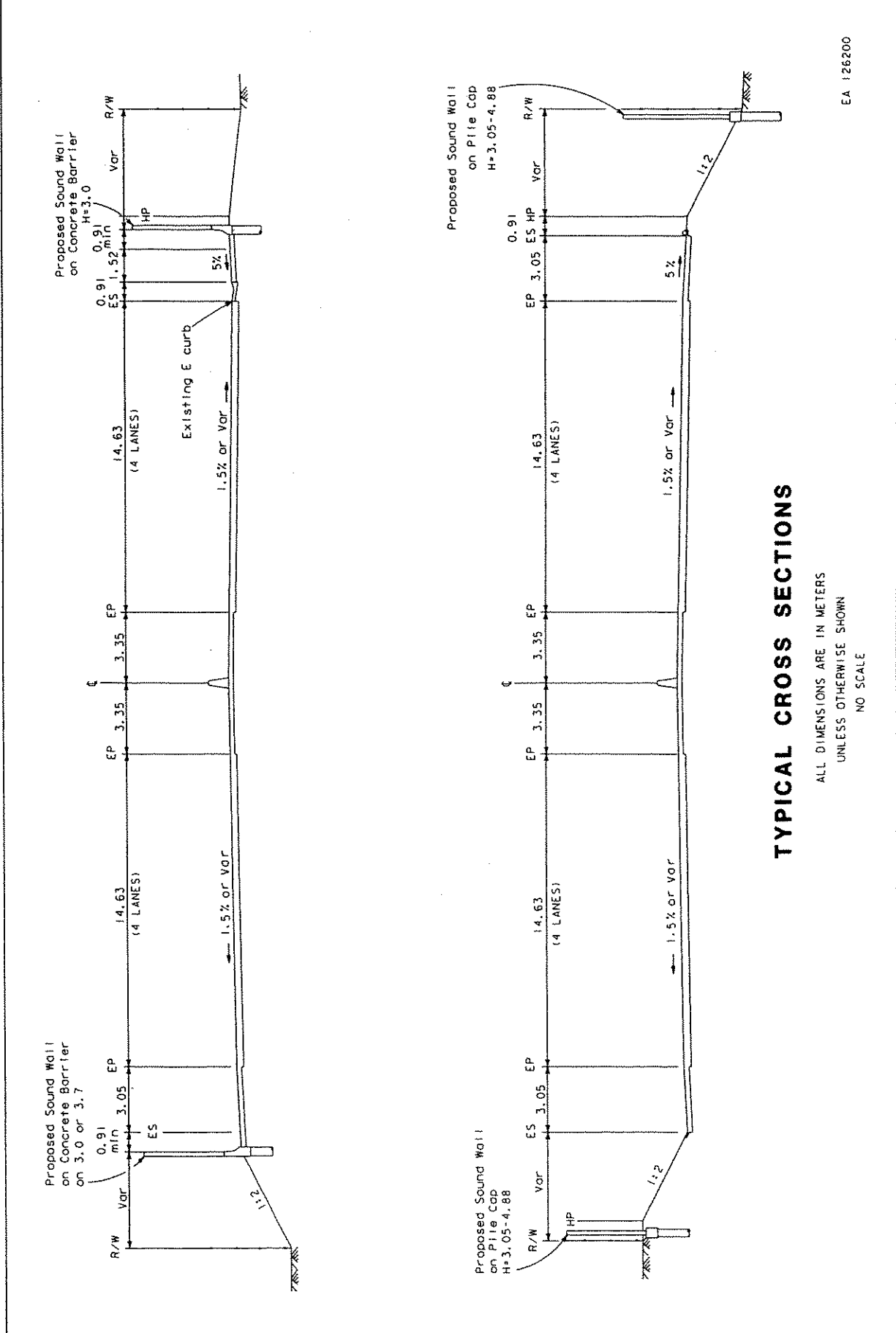
Construction Contract Work

Estimate Prepared by Lynn White

Phone # 510-286-5444 Date 3/19/2001

Estimate Reviewed by Lawrence J. Appiano

Phone # 510-286-5400 Date 4/25/2001



TYPICAL CROSS SECTIONS

ALL DIMENSIONS ARE IN METERS
UNLESS OTHERWISE SHOWN
NO SCALE

EA 126200

...1126201typicalxsectxsect.dgn Jan. 20, 2001 16:20:16

To: Design East, Alameda IAttention: Tony WongFrom: MICHAEL T. MCCUE
Right of Way Capital
CoordinatorDate February 22, 2001
Dist. 4 Co. ALA Rte. 580 P/M 33.5/34
E.A. 126200 K/P 53.9/55
Project Description Noise Barrier

LOG # 4333

Subject: Current Estimated Right of Way Costs

We have completed an estimate of the right of way costs for the above referenced project based on maps we received from you on January 22, 01 and the following assumptions and limiting conditions:

- ☐ 1. The mapping did not provide sufficient detail to determine the limits of the right of way required.
- ☐ 2. The transportation facilities have not been sufficiently designed so our estimator could determine the damages to any of the remainder parcels affected by the project.
- ☐ 3. Additional right of way requirements are anticipated, but are not defined due to the preliminary nature of the early design requirements.
- ☐ 4. This estimate does not include \$ _____ right of way costs previously incurred on the project, which may affect the total project right of way costs for programming purposes.
- ☐ 5. We have determined there are no right of way functional involvements in the proposed project at this time, as designed.

Right of way Lead Time will require a minimum of 19 months after we begin receiving final right of way requirements (PYPSCAN node No. 224), necessary environmental clearance has been obtained, and freeway agreements have been approved. From the date of receipt of final right of way requirements (PYPSCAN node No. 265), we will require a minimum of 11 months prior to the date of certification of the project. Shorter lead times will require either more right of way resources or an increased number of condemnation suits to be filed. Either of these actions may reflect adversely on the District's other programs or our public image generally.

Michael T. McCue
Right of Way Capital Coordinator

Attachments:

- ☐ Right of Way Data Sheet - Page One (always required)
- ☒ Right of Way Data Sheet - All Pages (required when interest in real property is being acquired)
- ☒ Utility Information Sheet
- ☐ Railroad Information Sheet

ATTACHMENT G

RIGHT OF WAY DATA SHEET

TO: Design East Alameda - I Date 3/29/01 #4333

Dist 04 Co Ala Rte 580 KP 53.9/55.7

ATTN: Tony Wong EA 126200

Project Description: Noise Barrier

SUBJECT: Right of Way Data – Alternate No. _____

1. Right of Way Cost Estimate:

	Current Value (Future Use)	Escalation Rate	Escalated Value
A. Acquisition, including Excess Lands and Damages	\$ <u>85,000.00</u>	%	\$ <u>85,000.00</u>
B. Loss of Goodwill	\$ <u>00.00</u>	%	\$ <u>00.00</u>
C. Utility Relocation (State Share)	\$ <u>1,500.00</u>	%	\$ <u>1,500.00</u>
D. Relocation Assistance	\$ <u>00.00</u>	%	\$ <u>00.00</u>
E. Clearance/Demolition	\$ <u>00.00</u>	%	\$ <u>00.00</u>
F. Title and Escrow Fees	\$ <u>00.00</u>	%	\$ <u>00.00</u>
G. Current Value (Future Use)	\$ <u>00.00</u>	%	\$ <u>00.00</u>
H. <u>TOTAL ESCALATED VALUE</u>			\$ <u>86,500.00</u>
I. Construction Contract Work	\$ <u>00.00</u>		

2. Anticipated Date of Right of Way Certification 07/03

3. Parcel Data:

Type	Dual/Appr	Utilities	RR Involvements	
X		U4-1	None	X
A <u>39</u>		-2	C&M Agrmt	
B		-3 <u>3</u>	Svc Contract	
C		-4	Lic/RE/Clauses	
D		U5-7 <u>6</u>		
E <u>XXXX</u>		-8	Misc R/W Work	
F <u>XXXX</u>		-9	RAP Displ	<u>0.00</u>
			Clear Demo	<u>0.00</u>
			Const. Permits	<u>0.00</u>
			Condemnation	<u>8</u>
Total <u>39</u>				

Areas: Right of Way _____ No. Excess Parcels _____ Excess _____

Enter PMCS Screens 4 / 24 / 2001 by Jennifer R. Muri

Enter AGRE Screen (Railroad data only) _____ / _____ by _____

4. Are there any major items of construction contract work?

Yes ☐ No ☒
(If yes, explain)

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

There are 39 parcels required for this project. Temporary Construction Easements are required from each parcel to build a soundwall.

6. Is there an effect on assessed valuation?

Yes ☐ Not Significant ☐ No ☒
(If yes, explain)

7. Are utility facilities or rights of way affected?

(If yes, attach Utility Information Sheet Exhibit 01-01-05)

Yes ☒ No ☐

Verifications required.

8. Are railroad facilities or rights of way affected?

(If yes, attach Railroad Information Sheet Exhibit 01-01-06)

Yes ☐ No ☒

9. Were any previously unidentified sites with hazardous waste and/or material found?

Yes ☐ None evident ☒
(If yes, attach memorandum per
Procedural Handbook Volume 1,
Section 101.011)

10. Are RAP displacements required?

(If yes, provide the following information)

Yes ☐ No ☒

No. of single family _____

No. of business/non profit _____

No. of multi-family _____

No. of farms _____

Based on Draft/Final Relocation Impact Statement/Study dated _____, it is anticipated that sufficient replacement housing (will/will not) be available without Last Resort Housing.

11. Are there material borrow and/or disposal sites required?

(If yes, explain)

Yes ☐ No ☒

12. Are there potential relinquishments and/or abandonments?

(If yes, explain)

Yes ☐ No ☒

13. Are there any existing and/or potential Airspace sites?

(If yes, explain)

Yes ☐ No ☒

14. **Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if District proposes less than PMCS lead time and/or if significant pressures for project advancement are anticipated.)**

PYPSCAN lead time (from Regular R/W to project certification) 19 months

15. **Is it anticipated that all Right of Way work be performed by CALTRANS staff?**

Yes ☒ No ☐
(If no, discuss)

Assumptions and Limiting Conditions

1. This estimate was completed using information provided by Tony Wong of Design East Alameda - I.
2. This estimate was completed without the benefit of a hazardous waste report.
3. Potholing was completed using general information provided by utility coordinator for potholing in the District.

Evaluation Prepared By:

LYNN WHITE

Right of Way:

Name

Lynn White

Date

3/19/01

Railroad:

Name

Pete Lynn

Date

4/19/01

Utilities:

Name

Robert Bragg

Date

4/24/01

Recommended for Approval:

Michael S. McInnis

Right of Way Capital Cost Coordinator

I have personally reviewed this Right of Way Data Sheet and all supporting information. It is my opinion that the probable Highest and Best Use, estimated values, escalation rates, and assumptions are reasonable and proper subject to the limiting conditions set forth, and find this Data Sheet complete and current.

[Signature]
Chief, R/W Appraisal Services

Date

4/25/01

cc: Program Manager
Project Manager

UTILITY INFORMATION SHEET

1. **Name of utility companies involved in project:**

EBUD
PG&E
PAC BELL
CITY OF SAN LEANDRO
AT&T CABLE

2. **Types of facilities and agreements required:**

Water, Sewer, Communications and electric.

3. **Additional information concerning utility involvements on this project:**

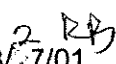
Because of the depth of some of the piles to be driven, potholing will probably be required.

4. **PMCS Input Information**

Utility Involvements			
U-4-1	_____	5-7	6
-2	_____	-8	_____
-3	3	-9	_____
-4	_____		

Prepared by:

Robert Bragg 
Right of Way Utility Estimator


3/27/01
Date

04-12620

NOTE: HOURS AS REPORTED IN XPM AS OF THE DECEMBER 6, 2000 SNAPSHOT.
SOURCE: PROGRAM MANAGEMENT XPM UNIT

04-12620 ALA 580 SOUNDWALLS ESTIMATED PROJECT SUPPORT HOURS

	FY99/00	FY00/01	FY01/02	FY02/03	FY03/04	FY04/05	FY05/06	
PA&ED	938	1,534	108	45	0	0	0	
PS&E	198	3,142	6,002	1,831	398	396	200	
R/W	2	5	82	72	23	22	12	
CONST	9	19	19	952	5,620	3,583	9	
PID	352	418	0	0	0	0	0	
TOTAL	1,499	5,118	6,211	2,900	6,041	4,001	221	25,991

NOTE: CURRENT (JANUARY 19, 2001) HOURS IN WPS SHOW A TOTAL OF 28,368 HOURS AND THE R/W HOURS IN THE DECEMBER 6, 2000 REPORT SEEM LOW. THEREFORE, TO MAKE AN ADJUSTMENT, ALL HOURS WILL BE PROPORTIONALLY INCREASED BY 9% AND ADDITIONAL HOURS ADDED TO R/W.

04-12620 ALA 580 SOUNDWALLS ADJUSTED---ESTIMATED PROJECT SUPPORT HOURS

	FY99/00	FY00/01	FY01/02	FY02/03	FY03/04	FY04/05	FY05/06	
PA&ED	1,022	1,672	118	49	0	0	0	
PS&E	216	3,425	6,542	1,996	434	432	218	
R/W	2	100	200	200	25	24	13	
CONST	10	21	21	1,038	6,126	3,905	10	
PID	384	456	0	0	0	0	0	
TOTAL	1,634	5,673	6,881	3,283	6,585	4,361	241	28,657

04-12620 ALA 580 SOUNDWALLS ADJUSTED---ESTIMATED PROJECT SUPPORT HOURS CONVERTED TO PY'S

	FY99/00	FY00/01	FY01/02	FY02/03	FY03/04	FY04/05	FY05/06	
PA&ED	0.6	1.0	0.1	0.0	0.0	0.0	0.0	
PS&E	0.1	1.9	3.7	1.1	0.2	0.2	0.1	
R/W	0.0	0.1	0.1	0.1	0.0	0.0	0.0	
CONST	0.0	0.0	0.0	0.6	3.5	2.2	0.0	
PID	0.2	0.3	0.0	0.0	0.0	0.0	0.0	
TOTAL	0.9	3.2	3.9	1.9	3.7	2.5	0.1	16.3

ALBERT ZEPEDA, JANUARY 19, 2001

04-12620 _ALA 580 SOUNDWALLS

Plot Date 12/14/00

Task ID	Task Name	Duration (Weeks)	Current Start	Current End	(X) Reported Progress	200020012002200320042005																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
						JANAPR JUL OCTJANAPR JUL OCTJANAPR JUL OCTJANAPR JUL OCTJANAPR JUL OCTJANAPR JUL OCT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
M	PROGRAM PROJECT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</

BAR TYPES: Current Sheet / Current Est, Percentage Complete, HIGHLIGHTS, PHOTOGRAPH, CODES, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100

CALTRANS XPM BAR CHART BY TASK I.D.

Approve Schedule
Revise Schedule

Project Manager Date

04-12620_ALA 580 SOUNDWALLS

PROJECT SUPPORT REPORT [in HRS]

PROJECT COMPONENTS	FY99/00	FY00/01	FY01/02	FY02/03	FY03/04	FY04/05	FY05/06
ALL PERMITS AND ENV. STUDIE	938	1,534	108	45	0	0	0
PS&E	198	3,142	6,002	1,831	398	396	200
RIGHT OF WAY	2	5	82	72	23	22	12
CONSTRUCTION	9	19	19	952	5,620	3,583	9
PID	352	418	0	0	0	0	0
TOTAL	1,499	5,118	6,211	2,900	6,041	4,001	221
							25,991

1758hrs - 1 pg ✓

xpm

AS of

12-6-00

04-12620_ALA 580 SOUNDWALLS

PROJECT SUPPORT REPORT [in \$]

PROJECT COMPONENTS	FY99/00	FY00/01	FY01/02	FY02/03	FY03/04	FY04/05	FY05/06
ALL PERMITS AND ENV. STUDIE	52,231	85,728	6,123	2,566	0	0	0
PS&E	12,462	180,129	349,030	111,156	25,206	25,139	12,669
RIGHT OF WAY	116	376	4,999	4,458	1,331	1,328	668
CONSTRUCTION	509	1,028	1,028	52,533	310,159	197,905	517
PID	20,457	24,299	0	0	0	0	0
TOTAL	85,775	291,560	361,180	170,713	336,696	224,372	13,854

1,484,150

xpm

As of

12-6-00



Project Deliverables and Responsible Unit

For detailed schedule and resources estimates refer to attached District 4 workplan Attachment B

Deliverable	# of Plan Sheets	Responsible Unit	WBS Activity Codes
Title Sheet	1	NRDesign	230
Typical Sections	1	NRDesign	230
Layouts	14	NRDesign	185, 230
Construction Details	5	NRDesign	230
Drainage Plans	6	NRDesign	230
Drainage Profiles	4	NRDesign	230
Drainage Details	2	NRDesign	230
Drainage Q Sheets	2	NRDesign	230
Utility Plans	4	NRDesign	230
Stage Construction	4	NRDesign	230
Construction Signing	2	NRDesign	230
Pavement Delineation	0	NRDesign	230
Quantities	2	NRDesign	230
Electrical	2	NREngrSvs	230
Signing	1	NRDesign	230
Specs & Estimate		NROE, NRDesign	230, 255, 260, 265
Design Support to Const.		NRDesign	270, 285
Project Management		NRDesign	100
Landscape		NRLandscape	230
Total	50		

FY	PY'S
00/01	1.2
01/02	2.5
02/03	2.2
TOTAL	5.9

[illegible]

